THE IRON AGE

THE NATIONAL METALWORKING WEEKLY June 22, 1950

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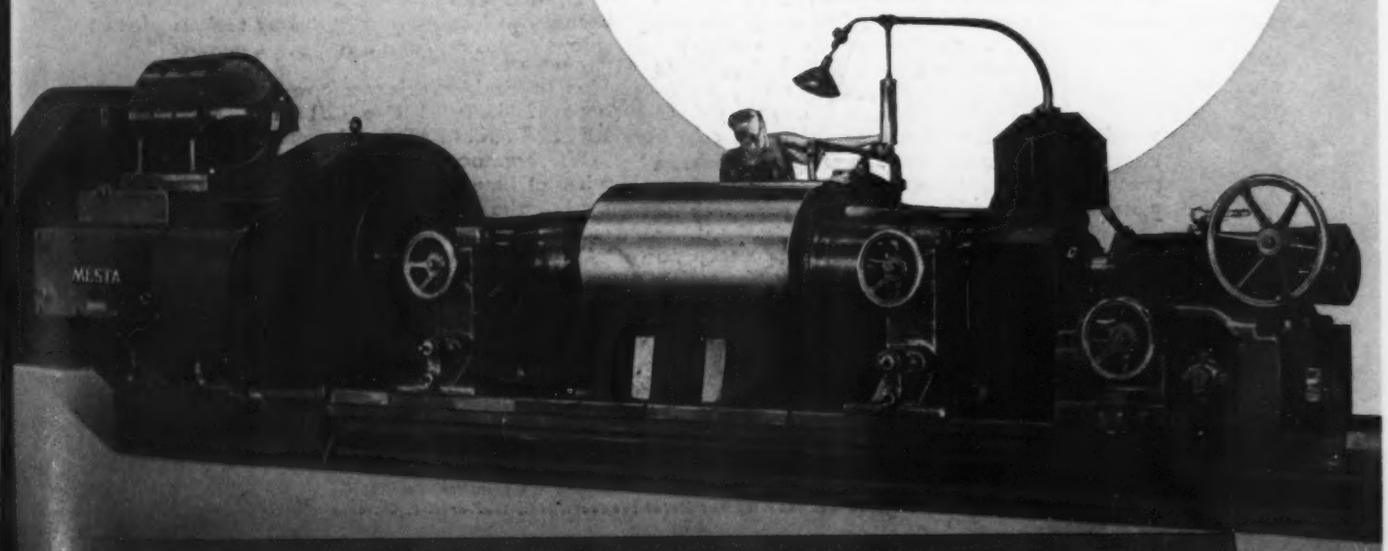


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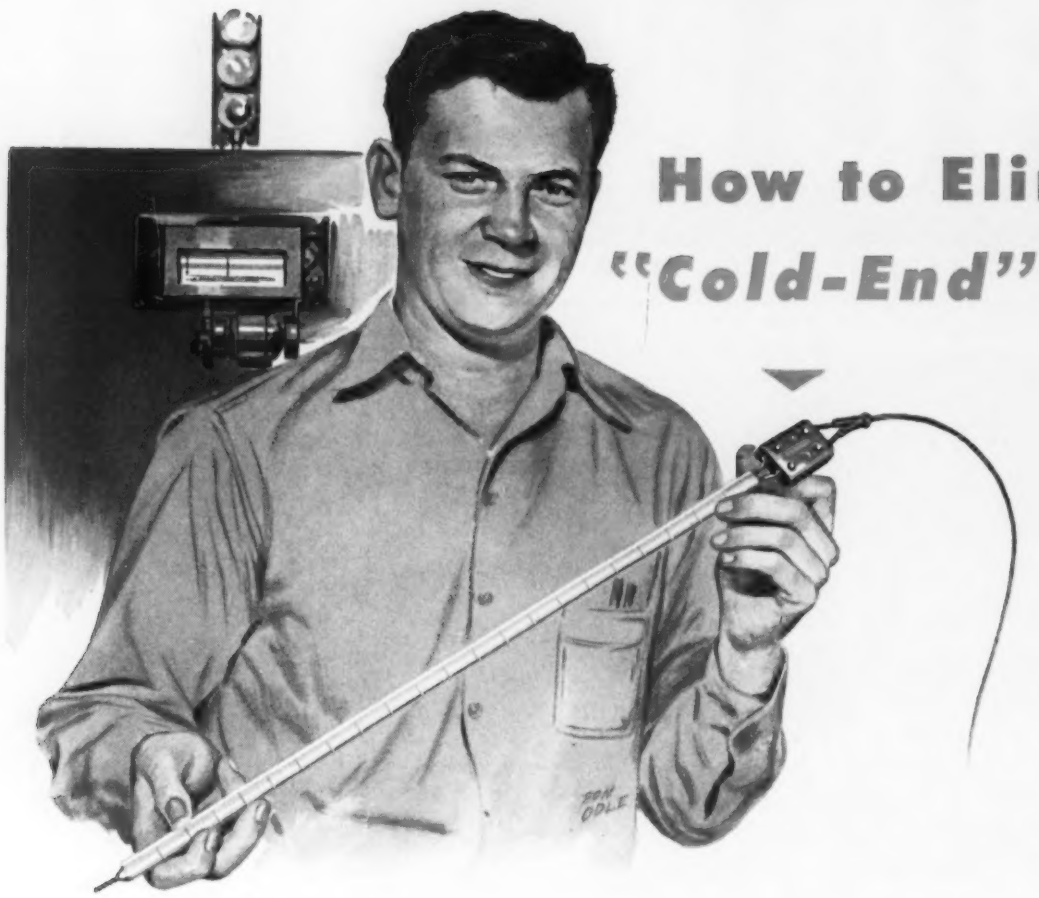

# How to Eliminate "Cold-End" Errors

## Use Chromel*-Alumel *Extension Leads* with your Chromel-Alumel Thermocouples

Modern pyrometers, within themselves, leave little to be desired as far as accuracy of temperature measurement is concerned. They're precision built instruments . . . delicately balanced . . . equipped with automatic cold-end compensators . . . designed and engineered throughout to give you the fine degree of accuracy you need. And, on 3 out of every 4 heat treating installations, these accurate meters are calibrated for CHROMEL-ALUMEL thermocouples . . . durable, dependable, sensitive couples unconditionally guaranteed to register true temperature—E.M.F. values within extremely close specified limits.

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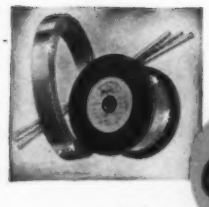

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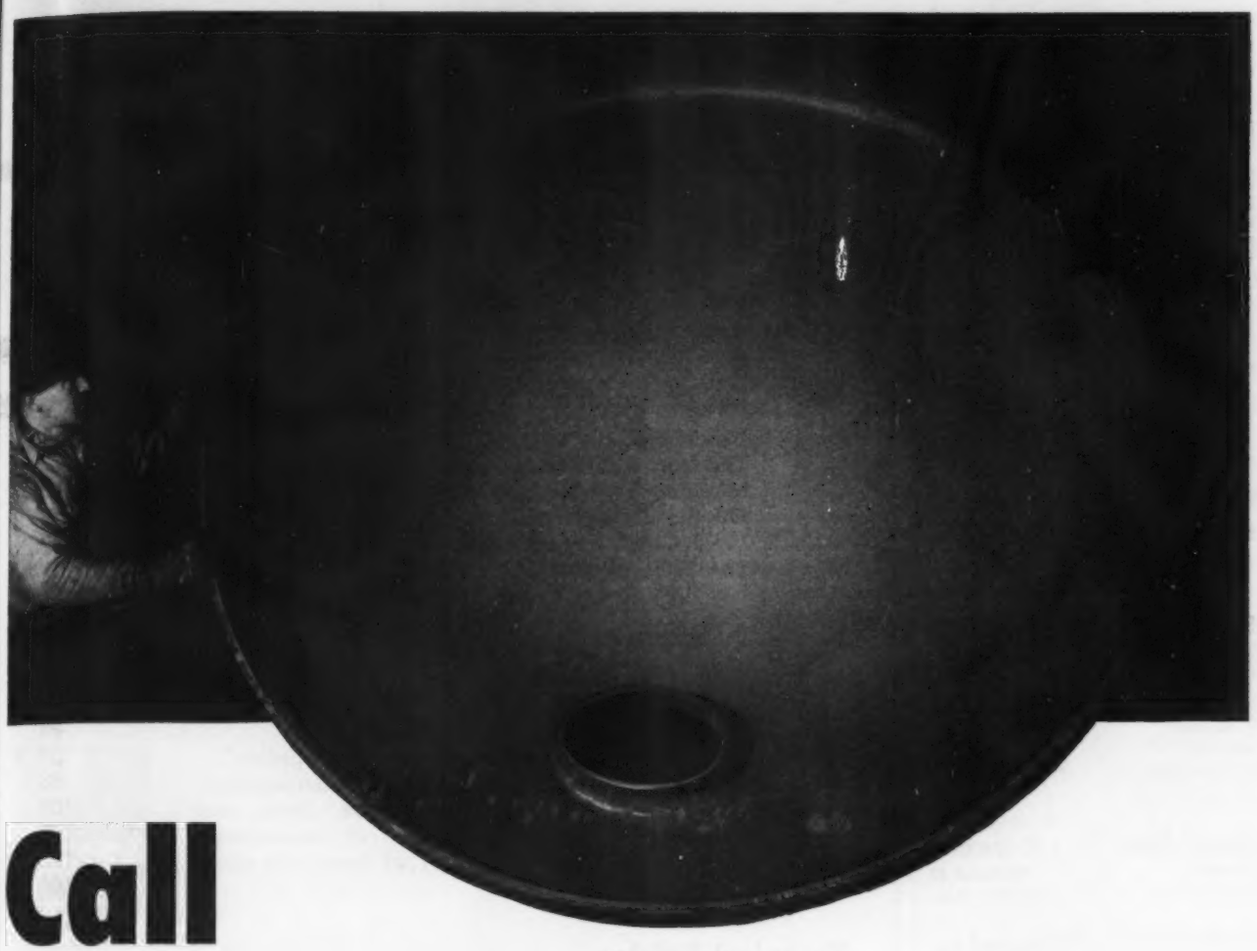

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# THE IRON AGE

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JUNE 22, 1950 • • • VOL. 165, No. 25

## Special Article

Cold headed, double extruded hexagon head bolts are more economical to manufacture than the quenched and tempered variety. Manufacturing and cold working techniques, along with reheating effects on microstructures are presented in the first part of a two-part article.—p. 81.

## Issue Highlights

Gas well christmas-tree fittings made of cast 12 pct Cr alloy steel give uninterrupted service and greater safety. Replacement savings are in millions of dollars. Cooperative research in the gas-condensate industry developed this corrosion resistant alloy.—p. 85.

Tooling costs for short run production of forgings and castings can be eliminated by making these parts on contour saws. Parts have been contour machined to three dimensions. In many cases these parts are stronger than those produced by regular methods.—p. 90.

Business is currently very good. And the majority of purchasing agents expect it to last through the end of the year. More than 3000 of them gathered in Cleveland last week to evaluate business trends, exchange vest-pocket notes and indulge in corridor gossip. They really laid it on the line.—p. 103.

President Truman's veto of the so-called basing point bill was a blow to industry. Despite all the talk about clarification, the freight absorption picture is still muddled. FTC's victory is regarded as a blow to many industries.—p. 101.

A tremendous battle is centered around the copper tariff which will come into effect again on June 30. On one side of the fence are the domestic producers of copper, and on the other, the independent copper fabricators and their customers. The consumers will probably lose since another tariff suspension is unlikely.—p. 105.

## Coming Next Week

Straight line mass production at Briggs makes possible production of 3000 complex welded and chrome plated stainless steel auto assemblies per day. Stock is polished prior to forming. Installation features world's largest automatic machine for chrome plating stainless.


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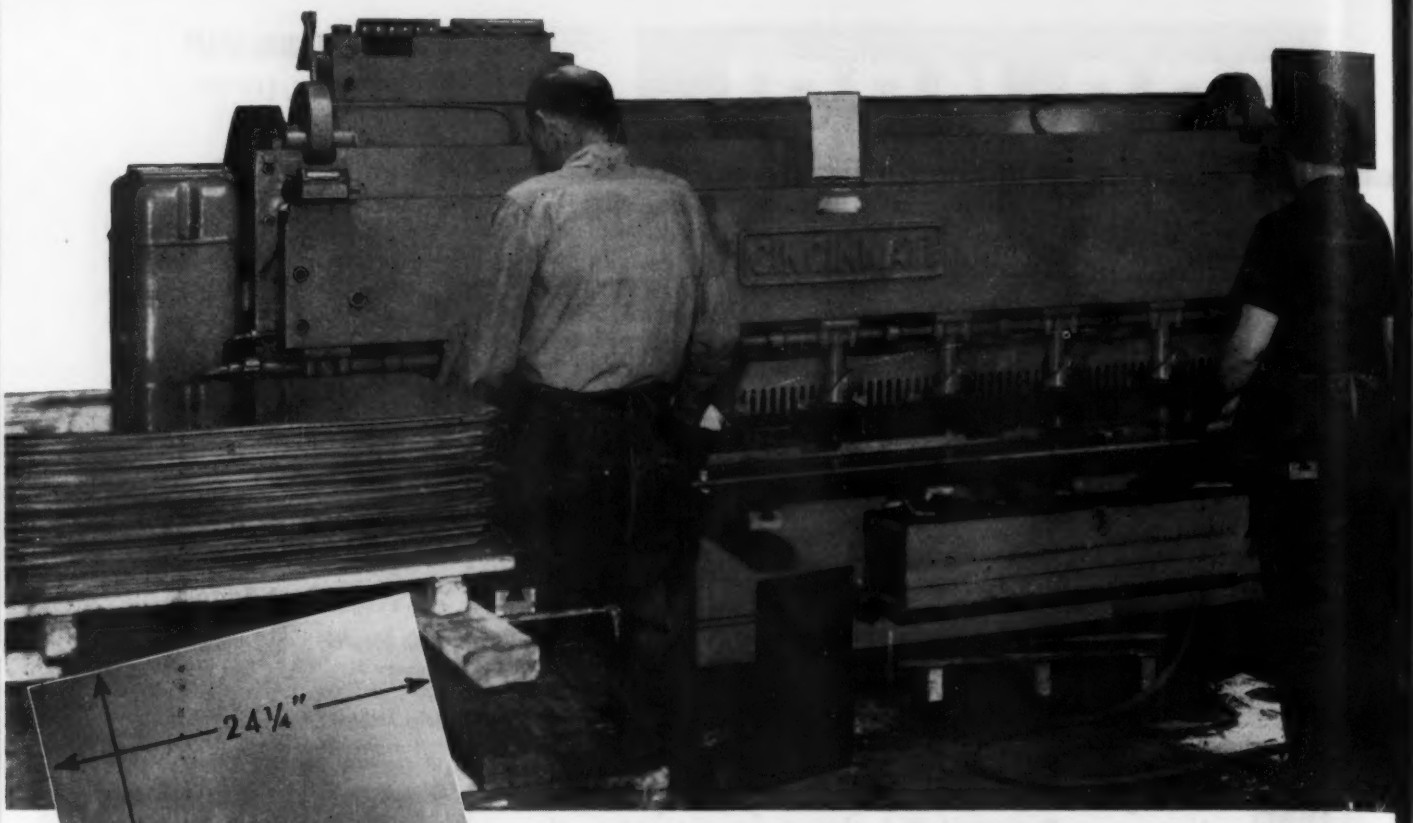

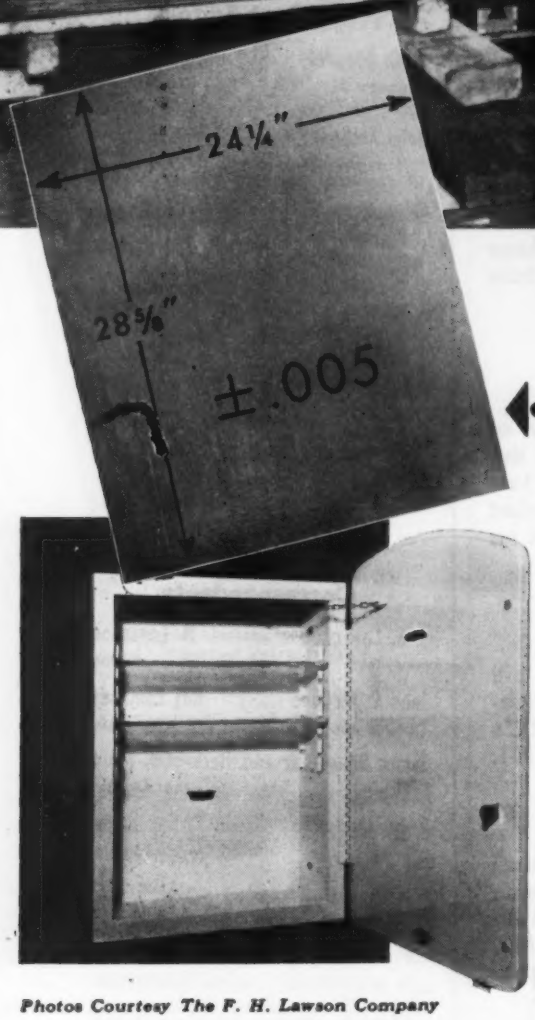


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# Editorial

INDUSTRY VIEWPOINTS

## What Goes On Here?

WE wonder sometimes if this is the land of the free and the home of the brave.

What raised our blood pressure was a reading of the first letter sent out by Rep. Frank Buchanan, D., Pa., to 166 corporations. The committee which he heads is investigating lobbying on legislative subjects by industrial firms.

There is nothing wrong with trying to find out who lobbies for or against what. But Representative Buchanan's letter covered the waterfront. He wanted to know: Expenses of each and every trip made to Washington and why; cost of maintaining a Washington office and why; data on advertising expenses covering public issues that might be subject to legislation plus expenditures for printed or duplicated matter.

To say that this letter was uncalled for and inept is putting it mildly. There are reports that most members of the committee did not see the first letter; that they did not authorize the contents.

Sixteen days later a second letter was sent out which tried to "clarify" the first. It said that the information was required only on matters of public interest that might be the subject of federal legislation. But the second letter did not lay the horror of the first.

We say horror because the letter originally mailed to a cross-section of American businessmen had all the earmarks of gestapoism, intimidation and general damnfoolishness.

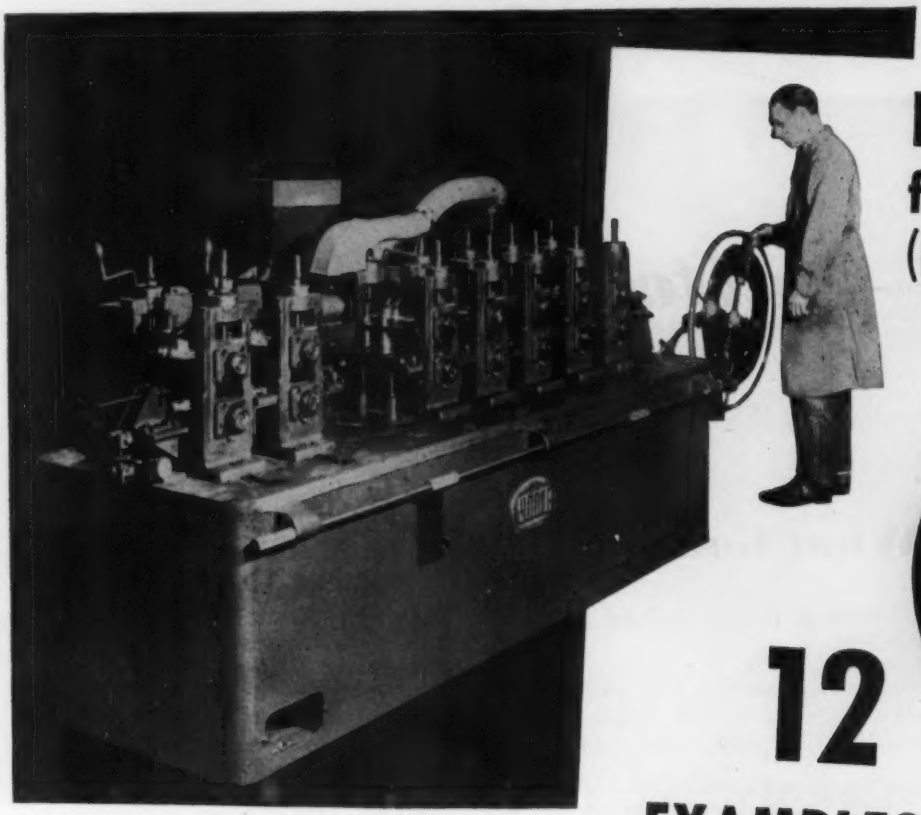
There have been only a few protests about this letter. Clarence B. Randall, president, Inland Steel Co., made no bones about why he would not answer the questionnaire about where he went, why and how much he spent for his dinner on the way. Inland will not answer any questions unless their present doubts as to Representative Buchanan's authority to ask these questions are satisfactorily cleared.

This is not a simple question of why or who went to Washington for what. It is a basic question of unbridled and arrogant snoopyism.

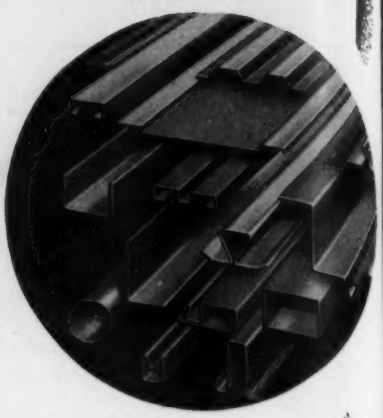
We should be vigilant about requests that go far beyond the bounds of democracy. The writing of the second "clarifying" letter proved that some one had stepped way beyond bounds in the first lettter. Maybe next time they will get away with it.

Tom C. Campbell

Editor



# No. 8 Forming, filling and closing (hollow) Carbide Welding Rod



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ENGINEERING YODER MANUFACTURING

# NEWSFRONT

NEWS, METHODS AND PRODUCT FORECAST

► Definite improvement in manganese ore shipments from South Africa is on the way. A beneficiating plant for low grade manganese ore will be started there soon to produce about 100 gross tons per hr of concentrate.

It will all be shipped to the U. S. Equipment will probably be bought in England. The technique used will be the first application on manganese ore.

► Cadillac, Oldsmobile and Pontiac will get a new torque converter transmission to replace Hydra-Matic but the introduction date will be several months behind the current crop of predictions. GM's Detroit Transmission Div. will probably build the new units.

► A lucky "laboratory accident" is credited with an assist in developing a compound that flame-proofs work clothing. A major steel company is outfitting workers on critical jobs with clothing impregnated with the new compound. Clothing remains fire-resistant after laundering and lasts at least twice as long as untreated garments on the same jobs.

► British interests will build a ferrochrome plant at Gwelo in Southern Rhodesia right in the heart of the chrome ore country. With water power, its power costs are expected to be fairly reasonable. But dam construction and power plant installation will probably take several years.

► Iron and steel truckers are feeling definite effects from the 80,000-lb railroad freight rate on steel shipments. Despite the rail strike, one big Pittsburgh trucker's business was off 13 pct in May; probably would have dropped 25 pct had the rail strike been averted. June shipments are being watched for a picture that may force some truck rate cutting on steel.

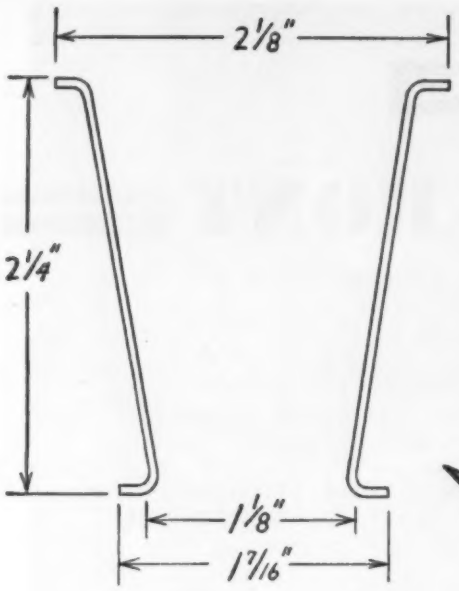
► Booming auto production is pushing new model car introductions further into the background. Several of the 1951 model debuts, originally slated for this fall, are being pushed back. If auto sales hold up, new model introductions will be later than most of the crystal ball gazers are predicting.

► A new electrostatic sampler developed for quantitative sampling of airborne dusts, fumes and smoke, is equipped with a portable sampling head, special high voltage cable and a special power pack to produce 10,000 to 15,000 v dc.

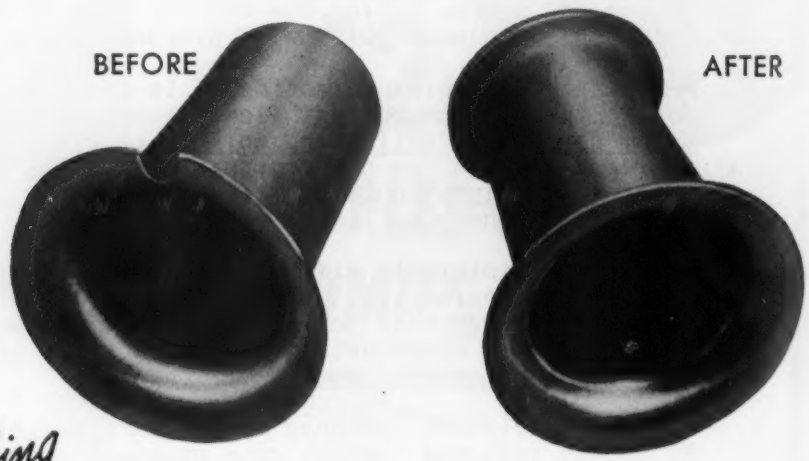
► Criticism of chemicals used for melting ice on northern roads may soon be turned to praise with adoption of new melting salts that actually inhibit rust formation on fenders and underbodies of cars.

► Producers of titanium metal are now hard pressed to keep up with expanding demand, principally for military applications. Ingots weighing 600 lb are being poured now. By fall, melting capacity for 1000-lb ingots is expected to be in operation.

► Experts figure the cost of building a military establishment designed to win World War III at $10 to $15 billion a year more than the cost of building one designed to prevent World War III.




*First they tried two makes of Type 304 Stainless Tubing, and got 50% rejects on the job.*




*Then they changed to Carpenter Stainless Tubing (Type 304) and eliminated the high cost of rejects and making more parts than were ordered.*

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**Operations Still Above 100**

# The Iron Age SUMMARY

IRON AND STEEL INDUSTRY TRENDS

WHEN the figures are toted up in a few days, hundreds of steel consumers will have shattered some of their best production records. Steel users are operating at a terrific clip—matching the smashing performance of the steel industry itself. By the end of the month, steel will have hung up some more new production records—and so will some of steel's best customers.

Few people are using the word boom to describe the state of the economy. But it doesn't matter what you call it, business is very good. The unprecedented steel production and huge order backlogs are the most obvious signs. But there are others. Steel's best customer, the auto industry, is producing at a rate (10 million vehicles a year) undreamed of a few short months ago. The appliance and farm equipment industries are making pikers out of the most optimistic forecasters. Construction activity, especially in housing, is terrific. This is true despite inflationary factors in the form of wage and price increases with resultant rising costs.

**Wage Discussions Ahead**

Apart from the fact that steel is being consumed in record tonnages, steel people say there are three accentuating factors: (1) In addition to current production requirements, steel consumers are trying to rebuild their inventories. There are signs that a few are beginning to have some degree of success. (2) Some consumers are speculating on the question of higher prices for steel, having already noted the renewed trend toward premium prices. (3) Some steel consumers are trying to protect themselves against the possibility of a steel strike.

Most steel labor contracts are reopenable on wages Nov. 1, and failure to agree could lead to a strike 60 days later. About this time last year steel users were reducing their inventories. By the time they decided to rebuild them they felt the impact of the steel strike, followed by further shut-downs due to unrest in the coal fields. They have been trying frantically ever since to maintain production and rebuild their inventories.

This week, pressure for delivery of carbon steel items is as strong as ever. Consumers are still faced with a shortage of flat-rolled products, with mill deliveries on these items about 6 weeks behind.

**Stainless Steel Surprise**

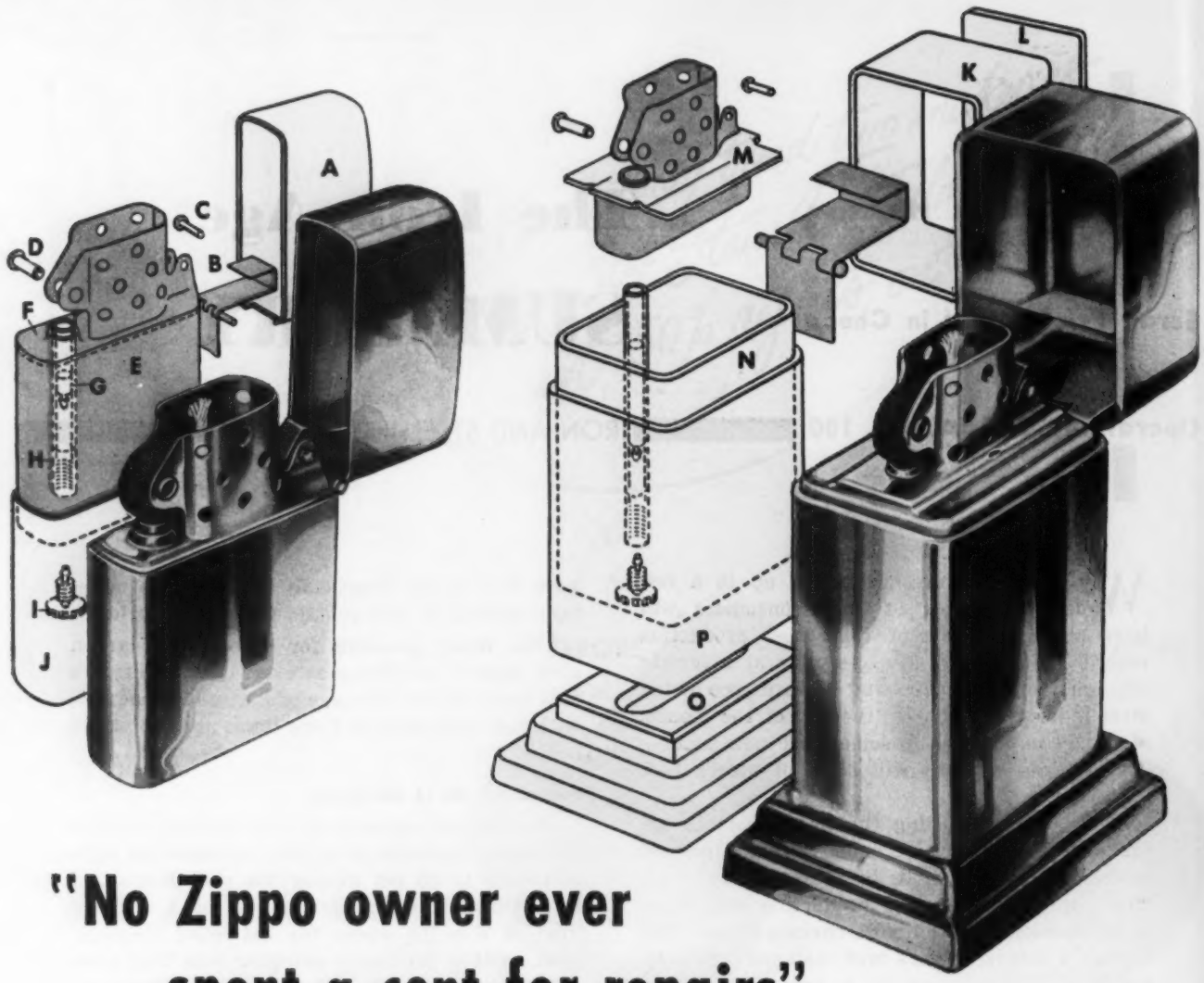
But the real surprise in the market is stainless steel. Stainless sales have increased an estimated 20 to 25 pct during the past 3 months. One Midwestern producer is quoting a delivery time of 8 to 10 weeks for flat-rolled stainless steel. Other producers shipping into that area are quoting 12 to 14 week deliveries on stainless steel sheets. Strip is quoted for delivery in October and November.

The mills have finally succeeded in checking run-away scrap prices—at least for the time being. They did this by (1) staying out of the market whenever possible, and (2) resorting to purchases of substantial tonnages of foreign scrap.

Foreign scrap has been seeping into Eastern mills right along. But while domestic prices were kicking up their heels during April and May some Midwestern mills started buying European scrap in significant tonnages, THE IRON AGE learned. This material will be loaded this month and will reach this country sometime during July.

**Oh Hum—Another Record**

Steelmaking operations this week are scheduled at 101.5 pct of rated capacity, marking the fifth consecutive week at that level. This will be the tenth consecutive week that the industry has produced at or above 100 pct of rated capacity. Vacations and hot weather will soon take their toll, but the rate will stay close to 100 as long as steel's customers keep clamoring for more.

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*Moral:* Your product will be worth more if it's made of brass, even if it costs more. And very often the extra metal cost is offset by longer tool life and lower fabricating costs . . . in lower plating and polishing costs . . . in a longer, rustless, usually expense-free service life. We'll be glad to help you find out. Address The American Brass Company, Waterbury 20, Connecticut. In Canada, New Toronto, Ont. 5098

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**TABLE LIGHTER** K and P, special shape seamless brass tube for top and bottom outside case. L, brass top plate. M, brass chimney seal plate. N, special shape seamless brass tube, telescopic fit. O, die pressed brass forging. Chimney unit and its components are the same as the pocket lighter. Both lighters are finished in gleaming chromium plate.

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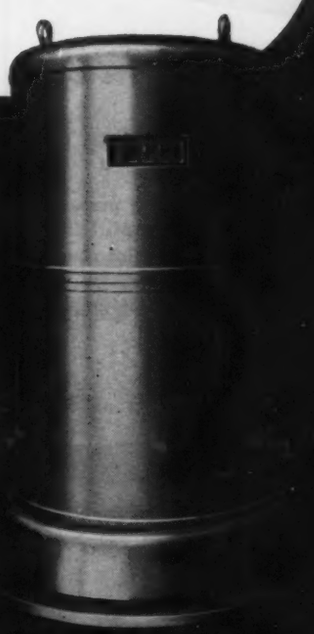

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NEW **FREE** BULLETIN

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**Dept. A-6, Cleveland 1, Ohio**

Please send copy of "A TOCCO Plant Survey—Your Profit Possibility for 1950"

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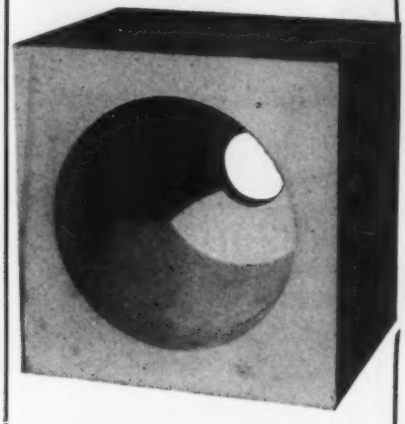
# MUL-8

*A quality Mullite Refractory*

Mul-8 contains a high percentage of Crystalline Mullite. Crystalline content has long been recognized as a controlling factor in the performance of mullite refractories.

PYROMETRIC CONE EQUIVALENT #38



BURNER BLOCKS and other shapes made to your specifications.

Standard shapes carried in stock.

Special shapes made to your specifications.

*Dependable Refractories*

REMMEY

RICHARD C. REMMEY SON CO.
Philadelphia 37, Pennsylvania


# Dear Editor

***Letters from Readers***

## Better System Offered

Sir:

My attention was called to the article "Profit Sharing Pays," appearing in the Mar. 23 issue of THE IRON AGE. I happened to be in on the organization of the Council of Profit Sharing Industries in Cleveland and I have given considerable study to profit sharing, and have come to the conclusion that profit sharing is not the answer to the economic problems of the day, although one of the approaches to a solution.

I am offering a solution which eliminates the corporate income tax, guarantees employment, and maintains the free enterprise system, details of which are pending now before the House Ways and Means Committee as H. R. 436. I attended the Federal Council conference of labor and management a short time ago in Detroit. Nothing tangible came out of that meeting because nothing tangible could come out of it in the way in which it was set up, with all due respect to the very fine gentlemen who make up the Federal Council official family.

*C. E. BROCKWAY*
*Brockway, McKay and Brockway, Lawyers*
*Sharon, Pa.*

## Grinding Balls

Sir:

We would be very much obliged if you could assist us with a problem which became actual in our cement plant. We have normally used forged steel balls in our ball mills. When the news reached us that in America large quantities of cast iron and cast steel balls were produced for this purpose and also for the grinding of ore and other material, we also tried balls made in this manner, but results have not satisfied up till now.

We are therefore very much interested to know: (1) Is it true that in America cast iron and cast steel balls are produced and used in large quantities; (2) are they always sound, or do they have a small blow hole in the center, especially the balls of cast steel; (3) are these balls centrifugally cast, cast in sand or chill cast; (4) are the cast balls heat treated after casting, or used without treatment; (5) are the balls cast in normal or alloyed quantities; and (6) are larger balls cast with risers or without?

*EISENWERKE MULHEIM/MEIDERICH*
*Mulheim-Ruhr*
*Germany*

**Cast steel balls are produced in large quantities in the U. S. Balls produced commercially are solid and do not have blow holes, and are machine cast in metal molds. They are heat treated, drawn and quenched after casting. Cast balls are high carbon, chrome or molybdenum alloy steel, and cast without risers.—Ed.**

## The Steel Situation

Sir:

Will you kindly send us one extra copy of the June 1 issue of THE IRON AGE wherein you show, on p. 15, a summary of the steel situation.

We note that your article has been widely quoted in the national newspaper-press, as we spotted it in Buffalo and Boston newspapers.

Will you kindly give us permission to reproduce this page in full and send it out to our list of dealers, totaling approximately 700 men who are in the oil heating business. Our purpose in sending out this article is to show our dealers just what the steel situation really is and we know of no better way to do it than to have them see this very excellent story of yours.

*T. A. HODGDON*
*Vice-President*
*Harvey-Whipple, Inc.*
*Springfield, Mass.*

**Permission granted.—Ed.**

## Another Supplier

Sir:

Kindly refer to the article, pp. 106-107 of your Apr. 27 issue. We wish to point out that the low-voltage generators were manufactured by us. The second paragraph on p. 107 would give the reader the impression that Westinghouse supplied all of the electrical equipment. We request, if possible, that you correct this statement.

*H. W. SUSSMAN*
*Columbia Electric Mfg. Co.*
*Cleveland*

**We're sorry about this omission. It was, of course, an unintentional oversight.—Ed.**

## Bringing Into Focus

Sir:

An article by E. W. Schoen on "An Easy Way to Measure Copper Grain Size," appeared in the Apr. 6 issue. This is the type of article we like to run in our magazine "*The Educational Focus*," which is sent to 47,000 high school, college and university science teachers, hospitals and industrial laboratories. Would you grant us permission to reprint this article with the usual credit line? If so, would you send along the art work, so that we may have plates made?

*A. H. BLUM*
*Editor, The Educational Focus*
*Bausch & Lomb Optical Co.*
*Rochester, N. Y.*

**We are glad to grant permission to run the article in your magazine. The art work has been forwarded.—Ed.**

*Here's a "pedigree"*

# to help you sell the steel products you make

***Label on the products you make will help you sell more of them, more easily***

HERE'S ONE EASY WAY to boost consumer acceptance for the steel products you make: Prove that they're made from *good steel.*

The U·S·S Label can help you do it. To wholesalers and retailers, it's positive proof that your product is made from the very best steel. *Their* customers know the U·S·S Label. For they've read about it in Life, The Saturday Evening Post and other leading national magazines... and heard about it on the Theatre Guild on the Air. Today, millions of consumers *accept* the U·S·S Label as their assurance of quality steel.

You're entitled to use the U·S·S Label when your products are made from high quality U·S·S Steels. And it doesn't matter what kind of steel you use — sheets, strip, tubing or wire . . . stainless, alloy, high strength or copper steel.

So put this famous label to work for you, and profit from the overwhelming public preference for products made from U·S·S Steel. For more information about the simple plan, write, wire or call United States Steel Corporation of Delaware, P. O. Box 236, Pittsburgh, Pennsylvania.

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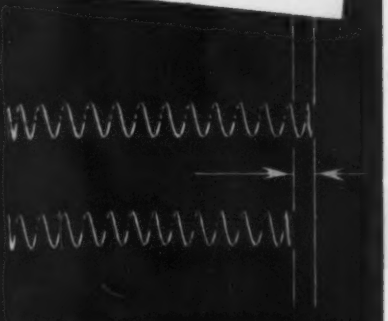
"FOR SPRINGS THAT STAY LIVELY LONGER!"



This actual photograph of two springs, taken after both springs had been subjected to the same tests, clearly indicates the superiority of ELGILOY as a spring material. Both springs were identical before testing! The ELGILOY spring (top) proved to have 5 times as much set resistance as the music wire spring!

ELGILOY

ELGILOY, fatigue resistant beyond any other spring material, is solving tough material problems wherever resistance to corrosion, set or fatigue is essential . . as in the manufacture of springs, instruments, valves, cameras and chemical processing equipment. In actual tests*, it has withstood over 1000 hours of salt spray exposure without evidence of corrosion!

ELGILOY is available for general industrial use in flats and rounds and can be blanked, formed, soldered, brazed or welded. Just mail the coupon below for information on the advantages of ELGILOY in *your* application.

**Tests performed in the Rock Island Arsenal Laboratory, 20% salt spray at 95° F.*

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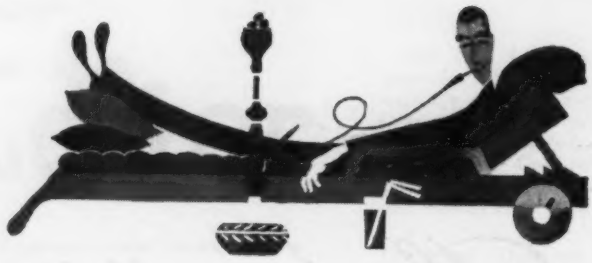
ELGIN, ILLINOIS



# Fatigue Cracks

By CHARLES T. POST

## Vanadium

You can speculate about possible new uranium ore sources all you want, but vanadium easily takes the prize among metals that turn up in queer places.

For years, a respectable tonnage has been extracted from flue dust and fly ash from oil burning ships burning Venezuelan oils. As we recall, the oil from one particular region is more productive than others.

Now, University of California oceanographers report that sea-squirts concentrate vanadium in their bodies. Each sea-squirt is something less than a potential producing mine, of course. But if the tool steel situation ever gets critical, we can tell the Resources Board to go jump in the ocean in a helpful sort of way.

## Table of Contents

Sloss-Sheffield Steel & Iron Co. publishes an excellent little company magazine called "Pig Iron Rough Notes," containing everything from practical foundry technology to recipes for gentlemen cooks. The contents page is headed, not by the word "Contents," but by "The Bull Ladle." Until we thought about it, we figured this as a nice twist on industry terms. Looking at it more closely, though, perhaps the editor is a masochist engaged in a little self-depreciation. Still a nice play on words, though.

## Unappreciated

Your favorite family journal's editors, known to us muckers as the "brains department," don't always get all the appreciation they deserve. It's probably the circulation department's fault for not raising the subscription price to at least $100 a year, instead of keeping it at $8 since 1942.

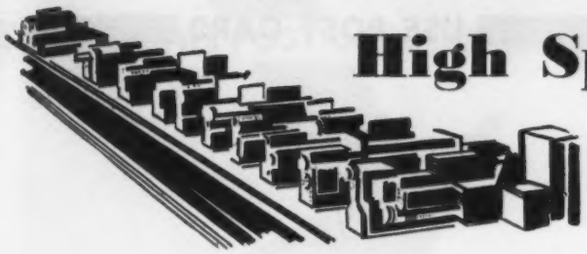
We notice that one of the "confidential" tip sheet services has moved into the metals field, charging an annual $100 for a biweekly 4-page crystal ball on market conditions. From what we can see, there's nothing in it that your f.f.j. doesn't serve the readers fresh every week as a steady diet.

Even Uncle Sam is not above making a bid for the snob trade. The Dept. of Commerce's Office of Technical Services is offering photostatic copies of a 37-page report on hot spot machining work undertaken for the Navy by Sam Tour & Co. The government describes the process as "a completely novel approach to metal cutting," gets $5 for the photostats. Way back last July 21, you lucky readers got a 12-page article on this work by the top officials of the Tour Co., and we don't think much has been added. There's some sort of law about competing with the government, so we'll have to whisper that FREE reprints of the article still are available.

## Puzzler

In case you haven't solved last week's long division problem, here are the clues submitted by W. L. Jackson: (1) The product of the divisor and 7 (Step No. 2) is a three-digit numeral which, when subtracted from a three-digit numeral, gives a remainder containing three digits. (2) In Step No. 3, the product of the third digit in the quotient and the divisor is a three-digit numeral which, when subtracted from a four-digit numeral, gives a remainder containing only two digits. Therefore, digit No. 3 in the quotient is greater than 7. (3) In Step No. 1 the product of the first digit in the quotient and the divisor is a four-digit numeral. Therefore, the first digit of the quotient is greater than the third, which in turn is greater than 7. Therefore, the first three digits in the quotient are 9,7,8. (4) The fourth digit is obviously zero, and the fifth is 9, since its product with the divisor is a four-digit numeral. The quotient therefore is 97809. (5) The divisor, when multiplied by 8, gives a three-digit numeral; when multiplied by 9 gives a four-digit numeral; thus the divisor must necessarily be between 112 and 124. By trial and error it is quickly established that 124 is the only numeral that satisfies all conditions.

# MACHINE TOOL High Spots



*Sales Inquiries and Production*

By W. A. LLOYD

**Detroit Stimulus** — Second half outlook for the machine tool industry this week appeared to have more plus and minus factors, despite the fact that most machine tool companies are operating far below capacity and new order volume, while relatively high, is below the peak of the past 2 months.

Brightest prospect on the immediate horizon is Detroit, focal point of a great deal of buying activity, as a result of new engine and transmission programs.

**On the Sunny-Side**—Also looming up is an estimated $1,500,000 in ECA business for the French, which must be placed before the end of the fiscal year, June 1.

Finally, the military aid program, for which a number of machine tool builders have quoted on a lot of equipment, any part of which would be a substantial order.

**A Little Gloom**—On the negative side is first the fact that summer is seasonally an off-period. Also, fall is the time when firms sometime clean up remaining appropriation money, but in an election year it is also the time they wait and see how things are going to come out.

In any event, the industry seems certain of topping 1949 by a rather comfortable margin.

**More Coming** — In Detroit, a number of machine tool suppliers are loaded with requests for quotations on new tooling. While much of the tooling for new engines has been placed, the number of contracts yet to be awarded is substantial.

Detroit sources indicate that Chrysler is considering a possible increase in the projected production rate of its new V-8 engine from 20 per hr to 40 per hr. Chrysler's new engine plans are not definitely established, but it appears at this time that the present DeSoto six engine will be moved to DeSoto-Warren and there is some speculation that a new eight-cylinder engine may also go to DeSoto-Warren.

**Ford Transmission** — Ford's plans to produce its new automatic transmission are moving into high gear. Present emphasis appears to be on the Borg-Warner plant at Muncie, which will make half the Ford transmissions.

Major equipment for this job has been placed with separate suppliers; none of the big transfer jobs is being duplicated by the same firm, it is understood. Initial production at Borg-Warner will get under way in a month or two while the Ford-Cincinnati plant is not expected to attain volume output before the end of the year.

**Tooling Added** — Quotations have been requested for the new Lincoln-Mercury engine which will be built at the Rouge. Also, Ford is reported adding to the tooling for its present production. Much of the present equipment, it is believed, will be adapted to the new Mercury and Lincoln engines.

**Assembly Line Overture**—Studebaker's new V-8 high compression engine is scheduled for pilot production in August, but it will probably be several months later before volume production is achieved. The 1951 Studebaker models will undoubtedly be equipped with the new power plants.

**"Changes Imminent"**—In Cleveland, Harold A. Berry, general purchasing division, Hotpoint, Inc., Chicago, told the 35th annual international convention of the National Association of Purchasing Agents that activity of the machine tool producers and their lead time bears out that changes will be made.

Motivation for these changes is mixed, Mr. Berry said. However, they will lead to greater competition and should spark more consumer interest.

**Survey of Industry** — Also in Cleveland, a national survey of the products and services offered by contract shops in the special tool and die industry is being conducted by National Tool and Die Manufacturers Assn. George S. Eaton, NTDMA executive secretary, said the survey is being made as a matter of preparedness.

"In case of war, it is expected that local committees in metalworking centers will be utilized to help see that orders for special tooling go to the shops best able to handle them," Mr. Eaton pointed out.

# FREE — USE POST CARD

# PUBLICATIONS

**New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.**

## Simplifies Holding

How Sundstrand magnetic Power-Grip chucks have wide application in tool room work, general purpose milling and production machining is illustrated in a new 16-p. booklet. The booklet shows a number of applications for a variety of parts, and describes the many features of these chucks. *Sundstrand Machine Tool Co.*

**For free copy insert No. 1 on postcard.**

## Wet Blaster Announced

Cro-Plate's answer to the problem of wet blasting is given in a new 4-p. folder explaining outstanding features of the Cro-Hone. The machine is a compact wet-blaster designed for easy maintenance and low cost in which all metal parts that come in contact with the liquid slurry are stainless steel or brass, eliminating corrosion and slurry contamination problems. *Cro-Plate Co., Inc.*

**For free copy insert No. 2 on postcard.**

## Lock Nut Data Given

Prepared mainly for engineers, designers, purchasing personnel and users of general and special fasteners, a new 28-p. catalog explains the elastic stop nut locking principle and tells where and how to use elastic stop nuts. The catalog contains information on sizes, dimensions, weights, finishes, a lock nut analysis, and general information. *Elastic Stop Nut Corp. of America.*

**For free copy insert No. 3 on postcard.**

## Save Space, Manhours

A new certified job study, based on savings through efficient materials handling, is presented in a 4-p. bulletin. Handling methods which effect substantial savings in manhours and increased storage space 200 pct are outlined in detail, illustrating how the Towmotor is used to make 12-ft stacks of 100 to 160-lb castings formerly stacked 3 to 5 ft high by hand methods. *Towmotor Corp.*

**For free copy insert No. 4 on postcard.**

## Centrifugal Pumps

Several models of the UZD type, two-stage, double suction centrifugal pump are presented in a new 4-p. folder listing important features and showing cutaway drawings to illustrate outstanding design and construction. Applications for these pumps include mine service, general water service, chemical industry and other large capacity high head services. *Worthington Pump & Machinery Corp.*

**For free copy insert No. 5 on postcard.**

## For 0.0001 in. Accuracy

Cost-cutting advantages made possible by mounting the Precise Grinder-Millers on standard machine tools are explained in a new 8-p. catalog. Specially designed fixtures for unusual setups are also available along with the complete set of mounts, attachments and accessories shown. *Precise Products Co.*

**For free copy insert No. 6 on postcard.**

## Universal Tester Shown

The Baldwin-Sonntag Model 60-H, developed to fill the need for a low-cost universal testing machine, is described in an illustrated 4-p. folder pointing out design features of this 60,000-lb capacity machine. Operation is explained and specifications are given, with a description of available accessories. *Baldwin Locomotive Works, Testing Equipment Dept.*

**For free copy insert No. 7 on postcard.**

## New Flexible Tubing

Inherent qualities of design and manufacture make Spiratube ideally adapted to the ducting of air and other gases, many solids, liquids at low pressure, all under a wide variety of service conditions, as described in a new 8-p. illustrated folder. A number of typical applications are shown. *Flexible Tubing Corp.*

**For free copy insert No. 8 on postcard.**

## Dust Collector

Dustbuster, a self-contained low cost dust collector for large bulk, noninflammable dusts, is described in a new bulletin. Ratings, specifications and price are all given, together with illustrations of installations. *Aget-Detroit Co.*

**For free copy insert No. 9 on postcard.**

## Electronic Micrometer

Graham-Mintel electronic micrometers, consisting of amplified and measuring heads and incorporating a built-in regulating transformer, are described in a 4-p. fold-

*Turn to Page 124*

USE THIS POST CARD

NEW

# PRODUCTION IDEAS

**New and improved production ideas, equipment, services and methods described here offer production economies**

## Stainless Tube

A new stainless steel that work-hardens slower than conventional chrome-nickel steels is available in tubing form, for applications requiring severe deforming, bending, or upsetting. Type analysis is carbon 0.08 max, chromium 16.0 pct, nickel 18.0 pct. The new material can be brazed or soldered after cold working. Round tubes are available in all sizes and standard gages up to 1⅝ in. OD and shapes whose equivalent round does not exceed 1⅝ in. OD. *Carpenter Steel Co.*

**For more data insert No. 20 on postcard.**

## Abrasive Wheels-Points

A new assortment of 144 abrasive wheels and points mounted on ⅛-in. steel mandrels is available. They are inserted in a handy, sturdy container ready for the mechanic's use. The assortment contains nine of each of 16 popular sizes and types. *Schupack Supply Co.*

**For more data insert No. 21 on postcard.**

## Selenium Rectifier

Designed for electroplating—particularly barrel plating—a new oil-immersed selenium rectifier uses hermetically sealed selenium stacks to withstand the corrosive atmosphere of a plating room. The new rectifier consists of a transformer, fan, and 12 rectifier stacks arranged in a steel casing. Two models are available: 6/12 or 9/18 v, 1500/750 amps, 230-460 v ac, 60 cycles, three phase. *General Electric Co.*

**For more data insert No. 22 on postcard.**

## Hardfacing Alloy

A new hardfacing alloy is designed primarily for applications involving high stress abrasion with medium impact. Cast in rod, bare or coated, Aircolite 59 is composed of chromium, molybdenum, carbon

**HOW TO USE:** On each of the postcards below there is room for you to request further data on four items described on these pages. Please fill out one of the sections COMPLETELY for each item in which you are interested.

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NEW

# PRODUCTION IDEAS

*Continued*

and iron. It has a low coefficient of friction, and therefore acquires a high polish. The deposit maintains its high hardness at temperatures up to 800°F. *Air Reduction Sales Corp.*

**For more data insert No. 23 on postcard.**

## Iron Sling Chains

An improved line of Sterling wrought iron sling chains consists of single, double, three-way and four-way slings of any length. Standard slings are ⅜ to 1½ in. chain with larger chain available on special order. Sterling chain is hand-forged from domestic double-refined hand puddled iron or Swedish charcoal Lancashire wrought iron. Chains are furnished with rings and slip hooks. They are proof-tested to twice their safe working load before shipment. *Cleveland Chain & Mfg. Co.*

**For more data insert No. 24 on postcard.**

## Industrial Clothing

Industrial clothing made from Union Carbide's Vinyon N yarn is claimed to have a high degree of resistance to destructive chemicals at concentrations used in industry. Resistance to chemicals is inherent in the fiber; the fabric is not treated. Although not fireproof, the work clothing is fire-resistant and will not support combustion. In tests, clothing has withstood more than 65 hr of continuous commercial laundering in the highest caustic soap concentrations. Greases and waxes can be safely removed with solvents and laundering caustics. Coveralls, laboratory coats, matched shirts and trousers, jackets, and bib overalls made with Vinyon N yarn are available in conventional sizes. *Chem-Wear Corp.*

**For more data insert No. 25 on postcard.**

## Carbon Dioxide System

Fire protection for Class B and C risks, and for Class A risks in closed vaults or storage rooms is provided by a new carbon dioxide fire extinguishing system, designed for localized protection or for total flooding with carbon dioxide gas. The battery and operating equipment may be located at, adjacent to, or remote from a risk. The release system is automatic or manual, or both. Any number of cylinders make up the battery. *American-LaFrance Foamite Corp.*

**For more data insert No. 26 on postcard.**

## File Package

Red Tang files are now being packed in All-Red boxes like other Simonds products. Special tops and end labels provide easy identification. *Simonds Saw & Steel Co.*

**For more data insert No. 27 on postcard.**

## Shop Desk

A metal shop desk designed to expedite efficient plant operation is constructed to afford comfortable writing while in a standing position, for supervisors, dispatchers, checkers, etc. It is 33 x 28⅞ x 43 in. high in front and 52¼ in. high in back. Drawer is 23½ x 26 x 4 in. Shelves for orders and records are located beneath a protective hood on the top. *Berger Mfg. Div. Republic Steel Corp.*

**For more data insert No. 28 on postcard.**

## Electric Cable Hoists

A new line of heavy duty electric cable hoists ranging in lifting capacity from ½ to 5 tons has motor totally enclosed within the cable drum, reducing overall dimensions and resulting in substantial weight-saving. Load sustaining parts are made from steel forgings and castings that are said to give these Bob-Cat hoists a 6 to 1 safety factor. A double internal gear train incorporates two Weston-type load brakes. The motor brake is connected to an up-limit cutoff switch. The load hook oscillates and swivels

**HOW TO USE:** On each of the postcards below there is room for you to request further data on four items described on these pages. Please fill out one of the sections COMPLETELY for each item in which you are interested.

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**120 DIETZ ROAD • • • WARREN, OHIO**

# NEW PRODUCTION IDEAS

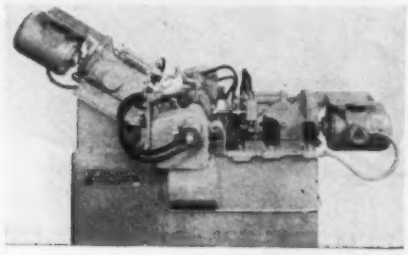
*Continued*

on roller bearings and is suspended on a 5/16-in. preformed plow steel cable. Hoists operate on 220, 380, 440 or 550 v, 3-phase, 60 cycle current. *Ohio Electric Mfg. Co.*

**For more data insert No. 29 on postcard, p. 37.**

## Indexing Machine

Three self-contained automatic units with 1½ hp capacity and 2½ in. stroke are incorporated in the

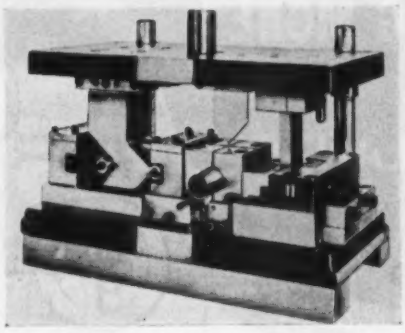


new No. 2 Millholland automatic indexing machine that is suitable for drilling, reaming, tapping, counterboring, chamfering or spotfacing. Two automatic units are mounted horizontally at right angles; the third unit is on an angle, around the work. In drilling 12 holes around the periphery of a flanged bushing and 24 holes in the flange end, the part is held in an air-operated collet chuck mounted on an automatic indexing spindle. The fixture spindle indexes six divisions automatically. Production is rated at 150 to 320 pieces per hr. Continuous or intermittent operation is pushbutton controlled. The automatic units have micrometer screw longitudinal adjustment. *W. K. Millholland Machinery Co.*

**For more data insert No. 30 on postcard, p. 37.**

## Tube Cutoff Shear

Claimed to be capable of cutting off 6000 pieces per hr while maintaining accuracy to 0.0004 in. in piece length, a new high speed tube

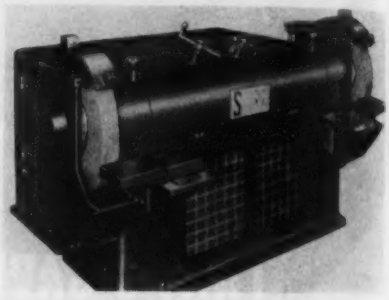


cutoff shear employs an arrangement of horizontal and vertical blades. The machine can be attached to a power punch press, and produces clean cuts with minimum burr or distortion. A built-in automatic tube stop assures uniform pieces. Tubing of any size, shape or wall thickness up to 3 in. OD can be cut off in the shear. *Vogel Tool & Die Corp.*

**For more data insert No. 31 on postcard, p. 37.**

## Snagging Grinder

A new twin-motor double end grinder is a two-in-one machine: each operator is independent of the other; one side may be stationary while the other wheel is operating;



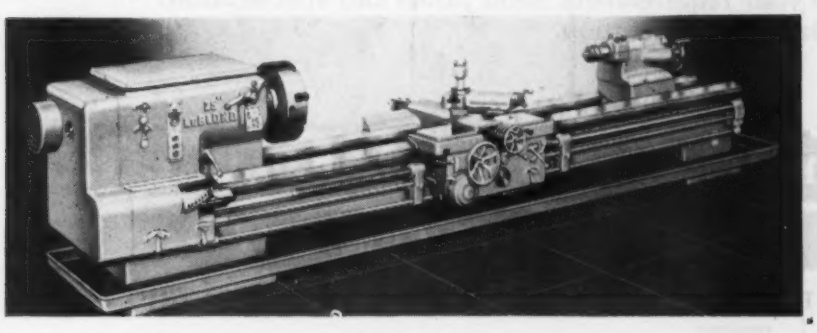
one side may be operated with a wheel differing in diameter from that of the other side, but each wheel can be operated at its correct, efficient and peripheral speed. Each grinding wheel is powered by an individual motor having its own magnetic starter and separate start-stop pushbutton station, shaft lock for changing wheels, and independent infinitely variable speed drive. The No. 55 grinder with two 15, 20, or 25 hp motors for 24 or 30-in. diam x 1½ in. to 4-in. face x 12 in. holes resinoid bond grinding wheels has a distance between wheels of 66½ in. *Standard Electrical Tool Co.*

**For more data insert No. 32 on postcard, p. 37.**

## Engine Lathe

A new 25-in. heavy duty engine lathe features a 30½ in. swing capacity, 32 spindle speeds ranging from 5 to 602 rpm, 4-directional power rapid traverse, totally enclosed quick change box, hardened and ground steel bed ways, and automatic lubrication throughout headstock, quick change box and apron. The headstock is built on the LeBlond free-running principle; gears not actually in use are cut out of the machining. The machine is arranged for 25, 30, or 40-hp, 1200 rpm main drive motor. Forty-eight feeds and threads may be selected. Standard thread range is ¾ to 46. *R. K. LeBlond Machine Tool Co.*

**For more data insert No. 33 on postcard, p. 37.**

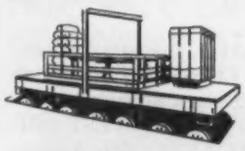


## Surface Grinders

A new line of vertical spindle surface grinders includes Fixed Column and Hydrovert (sliding column) models. All machines are hydraulic with simplified circuits. The wheel head features built-in motor and a heavy spindle mounted in super-precision preloaded ball bearings for radial load and spring loaded ball bearings for thrust load, all lifetime lubricated. Beds are heavy ribbed construction automatically lubricated. Levers, handwheel and pushbutton controls are

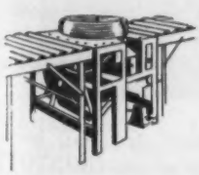
*Turn to Page 128*

# why RED is a SAFETY sign for 30,000 SHIPPERS



**Looks Like a Flatcar . . .** vibrates like a flatcar. This special device in Signode's Box Strapping Laboratory takes your product for a ride that simulates rail travel, discloses any faults in packing methods or materials.

**Many of Industry's Present Methods** of bracing carload shipments of iron, steel and related products were perfected on this 315-foot "railroad" that uses full-sized equipment.



**First Introduced in the Steel Industry,** this fully automatic power strapping machine performs a complete strapping operation in as short a time as 5 seconds . . . even on heavy wire coils!

This red Signode seal identifies the Signode System of Tensional Steel Strapping. More than that, it symbolizes a type of service without which all manufacturing, engineering and quality efforts would be in vain . . . shipment protection.

For thirty years, in the service of over 30,000 customers, Signode has devoted its facilities to the perfection of methods that would insure such protection, economically, for all kinds of products.

For example, Signode goes beyond the manufacture of high quality steel strapping and equipment . . . has long maintained a fully equipped packaging laboratory where customers' shipping containers are studied for improvements in design and construction. Signode operates the only railroad test-track used exclusively to search out better ways of bracing freight car shipments. Signode employs a large staff of product engineers solely for the development of cost-cutting equipment—such as the Power Strapping Machine.

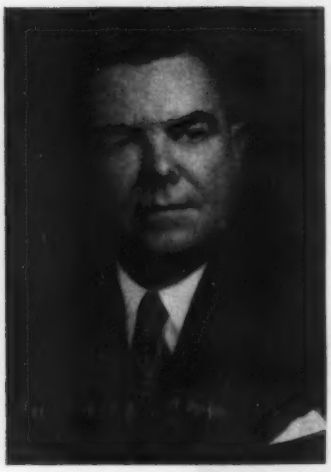
Regardless of what, where or how you ship, the chances are better than ever that this experience and this determination to stay first with the best in materials and methods can save you money, reduce damage claims and improve customer good will.

We'd like an opportunity to prove it.

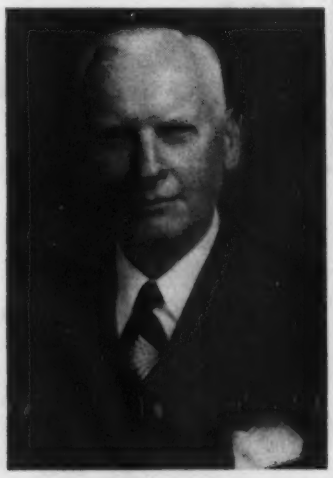
## SIGNODE STEEL STRAPPING COMPANY

**2623 N. Western Ave., Chicago 47, Ill.**

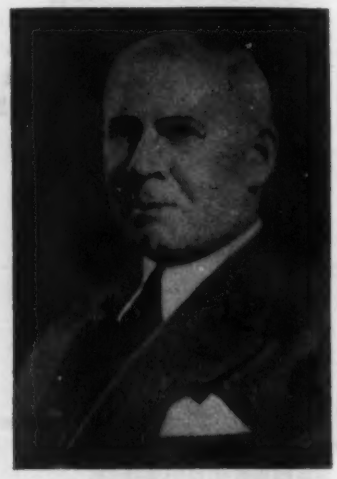
# Iron Age *Introduces*



GEORGE M. CARVLIN, vice-president, engineering and construction division, Koppers Co., Inc., has been named assistant general manager of that division.



JOSEPH VAN ACKEREN, retired as vice-president and assistant general manager, engineering and construction division, Koppers Co., Inc., will be retained as consultant.



DAVID J. GEMMELL, whose election as executive vice-president of the Cleveland Chain & Mfg. Co. was announced recently.

**John K. Broderick** and **Arthur L. Broderick** have retired as president and vice-president, respectively, and as directors of the BRODERICK & BASCOM ROPE CO. **Charles E. Bascom** has been elected president and **Joseph H. Bascom** has been elected first vice-president and secretary-treasurer. These officers, and J. F. **Hedding** of Pittsburgh, constitute the new board of directors.

**John F. Podger** was added to the staff of the UNITED STATES TESTING CO., INC.,

**Albert A. Thornbrough,** vice-president, was elected to the board of HARRY FERGUSON INC., Detroit.

**Loren R. Hunt** becomes business management manager of NASH MOTORS. He replaces **G. G. Smith,** recently appointed assistant zone manager at Detroit. **R. L. Martinson,** formerly service representative, was named assistant zone manager of the Dallas zone.

**Selden T. Williams** has been named president of A. SCHRADER'S SON INC.

**Perry T. Coons,** veteran of 40 years of sales service with AMERICAN STEEL & WIRE CO., was appointed assistant to vice-president-sales. **M. E. Capouch** was named manager of the construction materials sales division and **E. T. Eggers,** manager of the wire rope sales division.

**R. S. Koroncai** was recently named sales manager of the CLEVELAND INDUSTRIAL TOOL CORP. He succeeds **Hunter N. Williams,** who has been named vice-president in charge of sales.

**Don Rasmussen** was appointed western sales supervisor for EUTECTIC WELDING ALLOYS CORP., New York. Other advances announced were: **Herman Greif** and **Daniel Wetmare** to regional managers; **Hugh Hurley** and **Roy Waldrop** to assistant regional managers; **Don Garrett, Lee Wade** and **Alex Frederick** to district managers.

**James G. Rayburn** was named merchandising director of the LAMSON & SESSIONS CO., while **William E. Custar** is the newly appointed assistant sales manager.

**Joseph E. Rhoads** has been appointed general manager of the PLATING & GALVANIZING CO., Cleveland. Prior to joining the Plating & Galvanizing Co., Mr. Rhoads was vice-president of the PROGRESSIVE PLATING CORP., Elyria, Ohio.

**Lubertus Bakker,** industrial organic chemist, and **Charles F. Raley,** research chemist, were apponted to the staff of the SOUTHWEST RESEARCH INSTITUTE, San Antonio, Tex.

**E. W. Nick,** formerly president of the NORTHERN EQUIPMENT CO., Erie, Pa., a division of the CONTINENTAL FOUNDRY & MACHINE CO., has been elected chairman of the board. **George L. Davis** has been elected president of the Northern Equipment Co., to succeed Mr. Nick.

**William E. Criss** has been appointed manager of the order department of FORT DUQUESNE STEEL CO., Pittsburgh.

**James H. Rickey, Jr.,** has been made sales manager of the IRONTON FIRE BRICK CO., Ironton, Ohio.

D. A. Currie, president of the ERIE FOUNDRY CO., has resigned as general manager. The board of directors approved his appointment of **Robert N. Yates**, now vice-president, to assume the additional duties of general manager.

**Frank W. Kabat** was made head of the field representatives department of the PHYSICISTS RESEARCH CO., Ann Arbor, Mich. Messrs. **Arnold W. Lloyd** and **George Haber, Jr.**, have been appointed field representatives for the company.

**Dr. A. J. Weith, Jr.**, and **J. F. Allen** were named technical service representatives of the synthetic organic chemicals department, AMERICAN CYANAMID CO.

**F. L. Roewer**, for the past 15 years associated with the INTERNATIONAL NICKEL CO., has been named sales manager of ABRASIVE ALLOY CASTINGS CO., Bridgeboro, N. J.

**J. K. Sutter** was transferred from the Boston office to the New York sales office of the NATIONAL SUPPLY CO., Spang-Chalfant Div.

**D. E. Moorhead** was made administrative assistant to the manager of GENERAL ELECTRIC'S small and medium motor division, while **O. F. Vea**, is manager of sales, and **F. B. Hornby**, manager of engineering.

**Harold B. Leland** has been appointed vice-president-manufacturing of the HOOD RUBBER CO., Watertown, Mass.

**Edmund Pfeifer** is the new district manager of sales, Boston, for LUKENS STEEL CO., not assistant district manager as incorrectly stated in the June 8 issue of THE IRON AGE.

FREDERICK L. BRUCKNER, who has been made Los Angeles district manager of U. S. Steel Supply Co.

# Iron Age Salutes

## LOUIS POLK

TOO often success comes to people in the twilight of their careers. It doesn't seem quite fair, but it does happen that way again and again. That's why it is especially noteworthy and gratifying to see a man reach the top early in life.

Such is the case of Louis Polk. Now only 45 years old, he has already had a distinguished career in American industry. His past achievements have won him many laurels and wide acclaim. But Louis Polk is not content to rest on past laurels. A veritable human dynamo, he is constantly tackling new problems—seeking new worlds to conquer.

His latest honor will open an entire new vista of challenging problems. The directors of the American Ordinance Assn. have announced "with deep satisfaction" his appointment as general chairman of the Association's technical divisions and committees.

A summary of Mr. Polk's achievements reads like a composite of a dozen men's careers. For 13 years he has been president of the Sheffield Corp. of Dayton, Ohio, a leading producer of gages, precision measuring instruments, machine tools, threading tools and die heads. He also heads the Threadwell Tap and Die Co. of Greenfield, Mass. In addition, he is chairman of the Sheffield Corp. of Australia Pty. Ltd., at Melbourne. He is also chairman of the Gage Industry Div., of A.O.A., and president of the Cincinnati post. For several years he was treasurer of the National Machine Tool Builder's Assn.

Mr. Polk is a dynamic personality, a hard worker. To get things done, he gets right in there and slugs, and he expects those about him to do the same.

He is a graduate of Miami University, married, and has two children. His favorite relaxation is fishing—for speckled trout and bass.

On many occasions Mr. Polk has shown foresight and courage, as well as promotional ability, to bring out new engineering devices in which he had confidence. This is reflected in the outstanding success of his company through the years.

Back in 1938 Sheffield introduced a multiple air and electric gage which has since become the most popular instrument for many gaging applications. Practically all the latest auto plants have these gages.

DR. KARL L. FETTERS was appointed assistant to the vice-president in charge of operations, Youngstown Sheet & Tube Co.

WILLIAM H. YECKLEY becomes assistant to the vice-president in charge of operations, Youngstown Sheet & Tube Co.

ERICH G. ELG named to the newly created post of manager of railroad sales for Copperweld Steel Co.'s wire and cable division.

**J. L. Stewart,** sales representative of UNIVERSAL-CYCLOPS STEEL CORP., has been promoted to assistant district manager of the company's Chicago branch. **R. L. Springer** has been appointed assistant district manager, tool steel sales, of the Chicago branch.

**Joseph A. Blizman** was made sales and service engineer for the HERMAN PNEUMATIC MACHINE CO., Pittsburgh.

**J. P. Keller,** formerly superintendent of all generator and turbine bucket manufacturing for the turbine division of GENERAL ELECTRIC'S apparatus department, has been made assistant to the manager, industrial divisions. Replacing Mr. Keller will be **L. E. Newman,** previously assistant manager of the G-E Lynn, Mass. turbine and gear sales division.

**William H. Reiner** has been named assistant treasurer and **George R. Sullivan,** assistant secretary, of the ADDRESSOGRAPH - MULTIGRAPH CORP., Cleveland. Mr. Reiner will serve concurrently with assistant treasurer **Frank N. Harvey** and Mr. Sullivan will serve concurrently with assistant secretary **Donald C. Adams.**

**Kurt P. Wesseing** was appointed agent in the St. Louis territory for FERRACUTE MACHINE CO., Bridgeton, N. J.

**William E. Lynch, Jr.,** has been appointed assistant superintendent of rolling mills of the Midland Works, CRUCIBLE STEEL CO. OF AMERICA.

**James L. Johnson** was appointed sales manager for CORDLEY & HAYES, New York.

**Robert A. Brown,** who has been service engineer at the Cincinnati factory service station of BLACK & DECKER MFG. CO., Towson, Md., was promoted to sales engineer in the Atlanta branch territory. **George H. Thalman, Jr.,** will assume Mr. Brown's duties in Cincinnati. **Wm. F. Dunn, Jr.,** was promoted to sales engineer in the New Orleans territory, while **Grady R. Funk** has been transferred to fill Mr. Dunn's former post, service engineer at New Orleans. **Robert Dawson** has become sales engineer under the supervision of **W. L. Poynter,** Kansas City branch manager.

**Hal P. Kibbey** was promoted to the post of assistant Chicago district manager of U. S. STEEL SUPPLY CO., succeeding **Frederick L. Bruckner** whose appointment as Los Angeles manager is reported in this issue of THE IRON AGE.

**Lytton C. Musselman** was put in charge of the Los Angeles district office of YARNALL-WARING CO., Philadelphia. Other appointments in the company's sales organization include: **Wallace J. Agren,** Chicago, replacing **F. C. Harry Vaughan,** deceased; **R. W. Westlake,** sales engineer, Cleveland; **Andrew M. Ritter,** district manager, Detroit, replacing Charles H. Grosjean who is returning to the New York territory; **Lyle G. Chase, Jr.,** New York.

**Carl De Bourbon** of CARBET INC., New York City, will head the New York office of the FEDERAL MACHINE & WELDER CO., Warren, Ohio.

**R. L. Peaslee** has joined the WALL COLMONOY CORP., Detroit, as development engineer.

**E. E. Broberg** was named exclusive territorial sales agent in the upper peninsula of Michigan and most of Wisconsin for the DINGS MAGNETIC SEPARATOR CO. In northern California **E. D. Sampson** will represent the company, while **A. W. Nash** was assigned to the southern California territory.

**James G. Ehrhorn** was made sales manager of CRESCENT TRUCK CO., Lebanon, Pa.

**William C. Miller** has been named advertising manager of ROYAL METAL MFG. CO., Chicago.

## OBITUARIES

**Alfred W. Gregg,** consulting engineer for Whiting Corp., Harvey, Ill., passed away on June 8.

**George W. Grove,** 63, senior engineer, U. S. Bureau of Mines, Pittsburgh, died on June 5.

**George W. Pressell,** 62, vice-president of E. F. Houghton Co., died on June 5 at his summer home in Ocean City, N. J.

**Bernard H. Covich,** vice-president of the Atlantic Steel & Trading Co., Boston, died on June 6.

**Howard M. Smith,** 54, metallurgist at the Ambridge plant of Wyckoff Steel Co. for 26 years, passed away on June 2 following an automomile accident near Franklin, Pa.

**Frank R. Pierce,** 49, president of Dearborn Motors Corp., died recently at Charlotte, N. C., as a result of injuries sustained in an airplane crash. He was a former vice-president of General Motors and Nash-Kelvinator Corp.

# On the ASSEMBLY LINE

## AUTOMOTIVE NEWS AND OPINIONS

**Torque converter transmission to replace all other types . . . Progress being made in new engine tooling program . . . Pilot production of new Studebaker engine set for August.**

By WALTER G. PATTON

**Torque on Top**—There will be some delay but it is a fair conclusion that the torque-converter type transmission is destined soon to supersede other types now available. It is reliably reported that Cadillac, Oldsmobile and Pontiac will have a new torque-converter unit in the not-too-distant future.

The introduction time table is flexible. Many hopeful reports in the press anticipating an early introduction of the new transmission are believed to be premature. With motor car output at boom levels auto executives are naturally reluctant to interrupt their schedules for new models.

**A Packard First**—Trade reports have emphasized the fact that the new transmissions will lock out mechanically in high gear, a feature first introduced by Packard.

However, engineers claiming to have accurate knowledge of the new development contend this is only one of several novel features incorporated in the new transmissions that will provide some interesting surprises for the industry.

**Tooling Bids** — Most machine tool suppliers in the Detroit area are currently flooded with requests for quotations on new tooling. While much of the tooling for new engines has already been placed, the number of contracts yet to be awarded is substantial.

Trade reports indicate Chrysler is giving consideration to raising the projected production rate of its new V-8 engine from 20 to 40 per hr. Chrysler's new engine plans are not finally established but it now appears that the present De Soto 6 engine will be moved to the De Soto-Warren plant. There is some speculation that a new 8 cylinder engine may also go to De Soto-Warren.

**In High Gear** — Ford plans to produce its new automatic transmission are moving into high gear. At present the emphasis seems to be on the Borg-Warner plant at Muncie which will make half the Ford transmissions.

Incidentally, major equipment for this job has been placed with separate suppliers; none of the big transfer jobs is being duplicated by the same firm. Initial production at Borg-Warner will get under way in a month or two. The Ford-Cincinnati plant is not expected to reach volume output much before the end of the year.

**New Engine** — Quotations have been requested for the new Lincoln-Mercury engine to be built at the Rouge. In addition, Ford is reported to be constantly adding to and improving the tooling for its present engine production. Much of the present equipment, it is believed, will be adapted to the new engine.

**August Production** — Pilot production of the new Studebaker V-8 high compression engine is now scheduled for August but it will be several months later before volume output is achieved. The 1951 Studebaker models will undoubtedly be equipped with these new powerplants.

**Touching Tribute**—Perhaps the nicest tribute to Frank Pierce, late president of Dearborn Motors, who died as a result of an airplane accident at Charlotte, N. C., is the fact that the entire Dearborn Motors management team he built up was

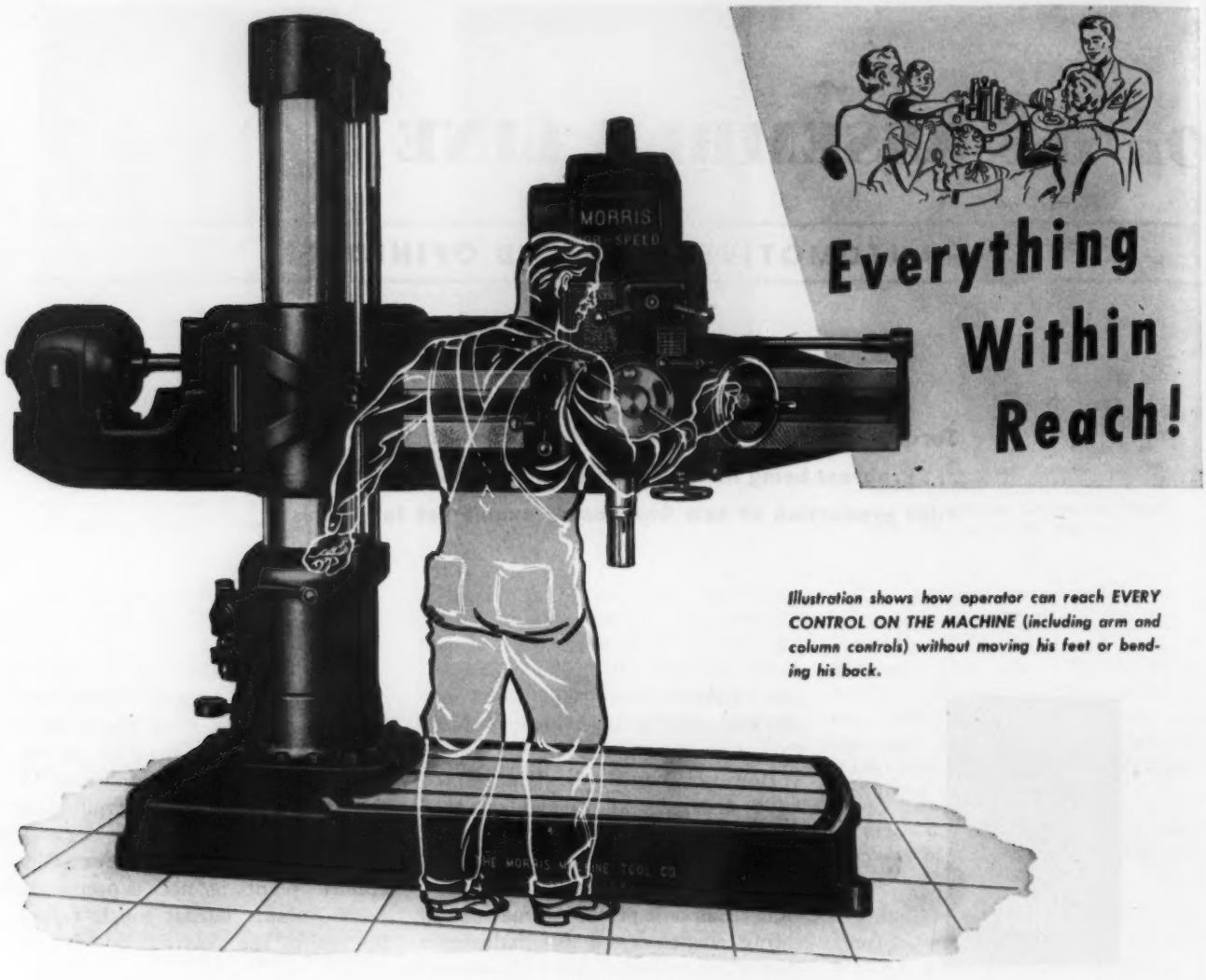



*Illustration shows how operator can reach EVERY CONTROL ON THE MACHINE (including arm and column controls) without moving his feet or bending his back.*

Designed to set a cost-killing pace in the race for profitable production, the MORRIS MOR-SPEED Radial Drill offers a long series of outstanding features:

Centralized Controls—reduces time between cuts.

Variety of Speeds and Feeds—better selection of the right combination for job at hand.

Automatic Lubrication—prevents damage and saves wear.

Greater strength, rigidity and balance—provides greater machining precision.

More automatic stops—saves time and reduces manual control.

If you are interested in removing metal faster, with greater precision and at less cost, investigate MORRIS "MOR-SPEED" Radial Drills. Write for copy of new Bulletin #39-A.

THE MORRIS MACHINE TOOL COMPANY

"A better product at less cost— with MORRIS ENGINEERED PRODUCTION"

Builders of MOR-SPEED Line

933 HARRIET STREET CINCINNATI 3, OHIO

moved along to fill the big gap left by his death.

Thomas A. Farrell is the new president and Merritt D. Hill becomes vice president and member of the board of directors. Among others who were promoted to more responsible jobs on the Dearborn Motors management team are G. D. Andrews, Ralph E. Hunt, I. R. Kappler, James F. Pedder and Larry Pomeroy.

Farrell has been vice president and a member of the board of directors of Dearborn Motors since its organization in 1946. His industrial background includes 21 years with General Motors Corp.

**Production Wonder**—If Chrysler is not stopped by a strike called last week at Motor Products Corp., major supplier of its auto parts, the company seems well on its way to establishing a production record that is almost unbelievable.

Production was started at Chrysler on May 8 after a strike lasting more than 14 weeks. During the first 24 hr of production Chrysler plants turned out nearly 5000 vehicles. By the end of the week the daily rate was up to 7000.

An all-time record output of 8252 cars and trucks was set May 26. To get out the record production, 13,000 Chrysler workers toiled for 7 days, 43,000 worked for 6 days and 23,000 had a 9-hr, 5-day week schedule.

**On Ration Basis**—Kaiser-Frazer output has reached 750 cars daily and scheduled output for this month totals 16,800 units. This is a gain of 181 pct compared with a year ago, according to Walter D. Martini, vice-president in charge of sales. K-F has been forced to allocate its cars to dealers because of the insistent demand for its new Kaiser models.

The new low-priced Kaiser car —the Henry J.—will go into production June 30, approximately on a schedule set months ago. It is expected that K-F will use one of its assembly lines for the present Kaiser and Frazer. Output of the Frazer models has tapered off appreciably.

**Henry J. Line**—A separate production line will be used for the Henry J. Initial production will be small but schedules are expected to be advanced rapidly once production gets under way.

Last week K-F announced it had completed arrangements for assembling Kaiser automobiles at the Reo plant in Leaside, a suburb of Toronto. Edgar F. Kaiser, K-F president, said the plant will be tooled to build ten Kaiser cars during an 8-hr shift.

Reo will continue its normal output of trucks and buses at the main plant. Tooling costs are being underwritten by Kaiser-Frazer while Reo supplies the labor force and plant facilities. Production is scheduled to start in late July.

**The Winning "88"**—The Oldsmobile "88" which won the recent 2178-mile cross-Mexico road race is currently being exhibited in several major U. S. cities. Hershel McGriff of Portland, Ore., who drove the winning car, received $17,381 first-prize money. The car was displayed in Detroit in front of the General Motors Bldg. last week.

**Hardtop Bandwagon**—The hardtop convertible design has made a big hit with the public. GM now has hardtops in each of its major lines. Last week Dodge announced its new Diplomat is in production.

Like its competitors, the six-passenger Diplomat has the body lines of a convertible and a permanent steel top. The Diplomat is available in five new two-tone exterior color combinations as well as the standard Coronet colors.

**Ford Follows**—In the near future Ford is also expected to introduce a hardtop model, featuring the body lines of a convertible and a permanent steel top. In these models the side windows crank down out of sight as in a convertible. The cars feature extra large, sweep-around rear windows.

**THE BULL OF THE WOODS** — By J. R. Williams

ON FINE WORK I PUT THAT PIECE OF TIN AROUND THE CENTER--AN' AFTER TH' CROSS FEED GETS TO A CERTAIN PLACE IT'S A LITTLE LOOSE AN' YOU JUST SLIP THIS IN TH' GUIDE-- NOW THIS PIECE--
HE'S GOIN' ON A VACATION, AND THOUGH HIS SUB IS AN EXPERT LATHE HAND, HE HAS TO SHOW HIM TH' THINGS THAT KEEP IT RUNNIN'!
LIKE BUYIN' A SECOND HAND CAR-- YOU'D NEVER NEED A NEW MOTOR IF TH' GUY WOULD EXPLAIN TH' CIGAR BOX OF TIN AN' BALIN' WIRE UNDER TH' SEAT!
J.R.WILLIAMS
THE VITAMIN SHOTS 6-23
T. M. REG. U. S. PAT. OFF. COPR. 1950 BY NEA SERVICE, INC.

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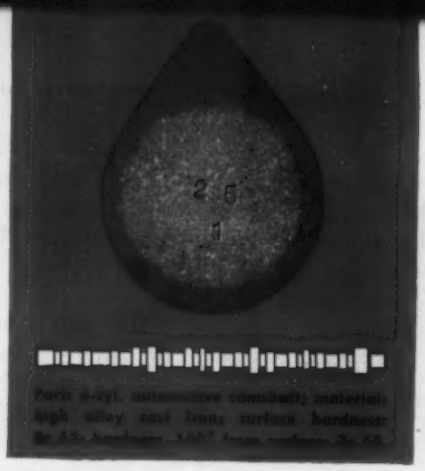
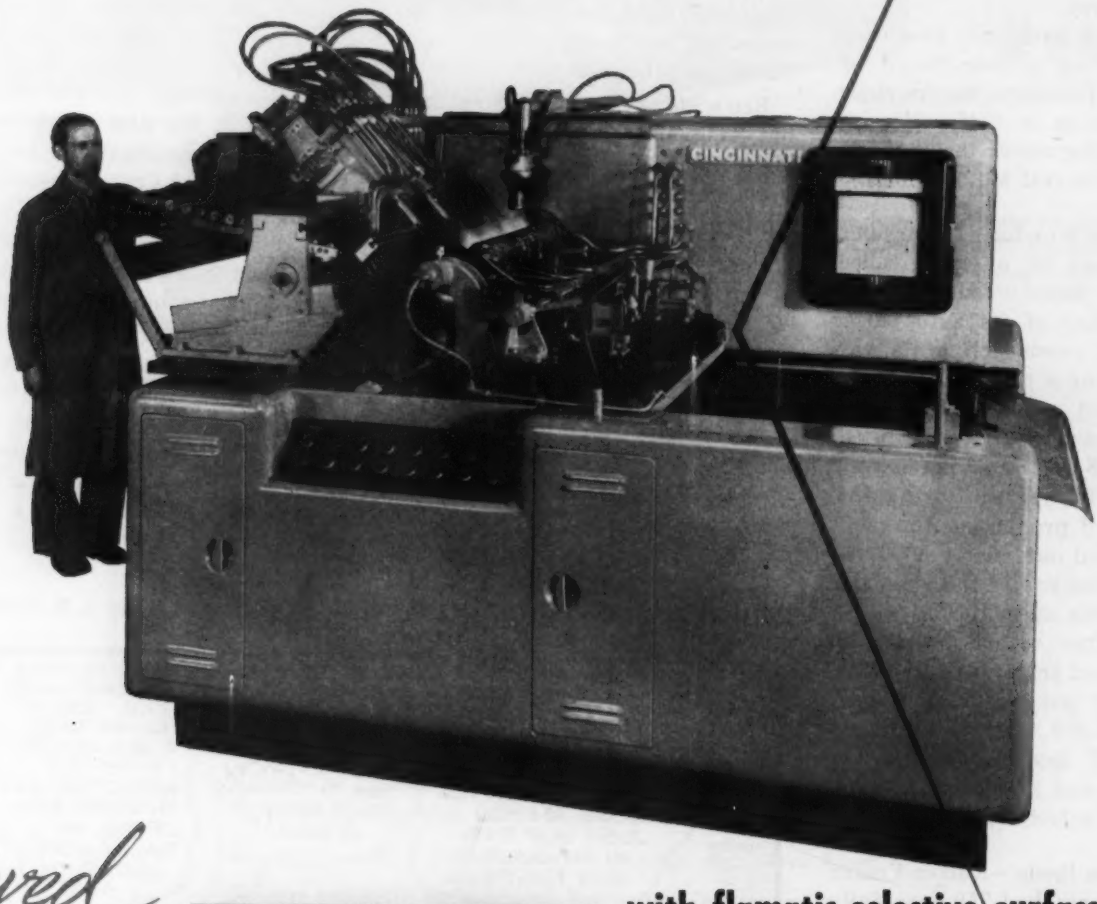


**"carbon copies" by the thousands**

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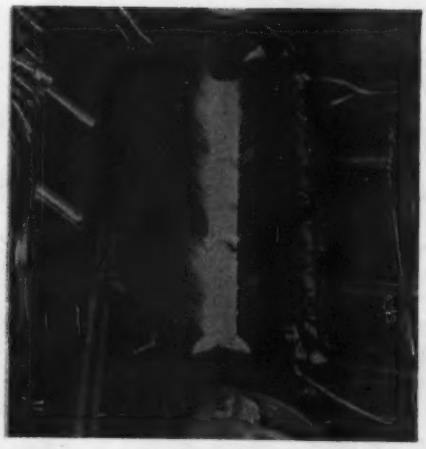

Above: Cincinnati Flamatic Hardening Machine in automobile manufacturer's plant. Right: Close-up of camshaft being processed.

**with flamatic selective surface hardening**

This job proves again that Flamatic hardening gives you virtually 100% predictable results, banishes distortion and human variables, puts surface hardening on a production basis. Results: duplicated to specs . . . every section a "carbon copy" of the etched section shown above. Distortion negligible, no subsequent straightening needed. Flamatic holds to rigid specifications through electronic control of temperature (within plus or minus 5°F), handles gears, cams, etc., up to 18" OD, shafts, etc., up to 24" long. Write for booklet "FH" of case histories, or better still, send us a part print for analysis and recommendations.

**flamatic**

THE CINCINNATI MILLING MACHINE CO

Cincinnati 9, Ohio, U.S.A.

CINCINNATI

# THE FEDERAL VIEW

## THIS WEEK IN WASHINGTON

By EUGENE J. HARDY

**Investment Incentive**—American firms have not gone in heavily for the Marshall Plan investment guarantees. Only about $30 million has been issued against five times that amount available to ECA. However, Marshall Plan officials have succeeded in getting new incentives written into the legislation for the coming fiscal year.

One of the new provisions extends the conversion guarantees to include such intangibles as patents, processes and techniques (formerly only capital equipment and cash investment, plus a certain amount of profits were covered). Also, guaranty is now provided for the first time against loss through expropriation or confiscation by changing the definition of a "participating" country to include "a successor government or governing authority."

**Economists Set Back**—The decline in prestige suffered by President Truman's Council of Economic Advisers as a result of the White House decision to place political considerations ahead of economic reasoning is beginning to have its effect on the Council's congressional counterpart — the Senate-House Committee on the Economic Report.

Senator O'Mahoney, D., Wyo., chairman of the joint group, is privately quite concerned over this set-back, but his colleagues in the ranks of both political parties point out in cloakroom talks that he did little or nothing to help the situation last week when he rubber-stamped his OK on the White House "planned economy" views of last January.

**Perfect Harmony** — Democratic members of the joint committee said, in effect, in their latest report, "everything Leon Keyserling (chairman of the Council of Economic Advisers) says goes for us, too." CEA had proposed new government controls over business, acceptance of continued deficit financing as a "natural" function of government, and sharp increases in corporation taxes.

**Federal Building**—Officials continue to emphasize that no Federal building program "of any size or extent" is going on. Nonetheless, billions of dollars worth of both state and public works proposals are ready for the planning stage.

More than 4000 such projects are ready for blueprinting and may represent considerable departure from former designs. To quote one official, future designs are "breaking away from old standards."

This means, he says, that wherever possible there will be a reduction of dead weight and probably less structural and reinforcing steel. More general use will be made of nonferrous metals for doors, windows, and related items.

**Turkish Chromite**—The United States is growing more and more dependent upon Turkey as its major source of supply for chrome ore. But mining of Turkish chromite is a high-cost operation—due largely to lack of modern equipment, lack of skilled labor, and inadequate transportation facilities.

While known Turkish reserves are relatively small in comparison with world demand, it is believed that substantial deposits are there to be uncovered and that some abandoned mines could be reopened if costs could be lowered. These are the major reasons behind Marshall Plan shipments of mining and road-building equipment.

**Tin Authority Asked**—It's beginning to look as though the government is in the tin business to stay.

It now appears likely that both the Senate and House will give the nod to new legislation permitting the Reconstruction Finance Corp. to keep on operating the Texas City, Texas, tin smelter until July 1, 1950, but with the proviso that "authority shall be exercised and performed with due regard to the public interest in the maintenance of domestic smelting of Western Hemisphere tin ores and concentrates by American private enterprise."

In other words, Congress is telling RFC not to encroach further than it already has into that part of the domestic market served by private business.

**Handling Equipment**—Prospects look bright for the United Kingdom to become fertile ground for future sales of materials handling equipment. Labor and industrial leaders from England who have been visiting American factories during the past year have turned in glowing accounts of this particular type of labor-saving and Yankee know-how.

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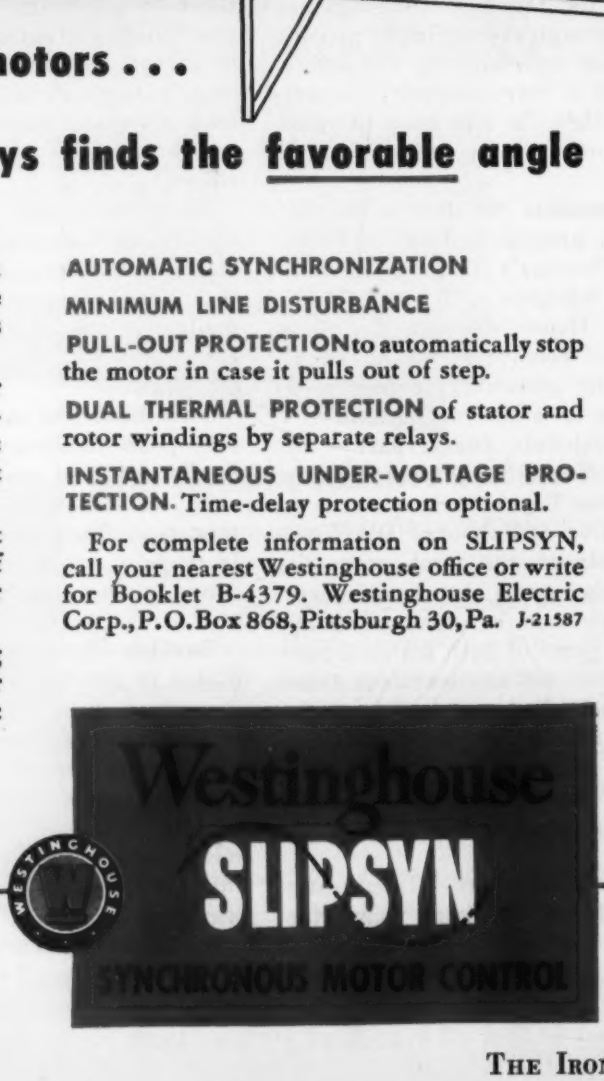


# WEST COAST PROGRESS REPORT

**Digest of Far West Industrial Activity—By R. T. REINHARDT**

**Steel on Wheels** — While the West assembles only about 8 pct of all automobiles manufactured in the country and there is relatively little actual fabrication involved, nonetheless this industry is an important steel buyer and is feeling the steel supply pinch.

For greater freedom from eastern headaches, the seven companies assembling cars on the West Coast have increasingly stepped up their purchases locally. Both Ford and General Motors are now buying in the neighborhood of $60 million worth of their requirements in this area each year.

More and more automobile manufacturers are purchasing as much of their steel requirements in the West as possible. Ford will spend about $14 million for sheet metal parts and $4 million for forgings, castings, etc., this year.

**Rolled Products** — Availability of western steel has been an important factor in keeping production lines moving, and Kaiser Steel Corp. alone during the last 5 months has sold to automotive parts manufacturers approximately 21,000 tons of rolled products which have gone into Fords, Chryslers, and General Motors cars.

This is about 7 pct of the mill's rolled products capacity. Principal items were alloy and carbon bars, hot rolled strip and sheet, and cold rolled strip and sheet.

**More Elbow Room** — Bids are being studied for a 250,000-sq ft expansion of floor space for General Motors' Pontiac, Oldsmobile and Buick plant in Los Angeles. Construction, starting this summer, will not increase production but will provide greater flexibility, more storage space and "better working conditions."

Several temporary buildings for car conditioning will be replaced. Despite capacity production on the three cars, delays in delivery up to a month are now common.

**Expensive Smoke** — Work is expected to be completed at the Columbia Steel Co. plant, Torrance, Calif., in October on the installation of electrostatic precipitator equipment which, if successful, will for the first time eliminate smoke and fumes from an openhearth furnace.

The precipitators, already tested thoroughly in model, will gather the film or the solids out of openhearth gases by passing them through a discharge flue from the furnaces to a large boiler which will cool the gases from 1300° to 500°F. The gases then are passed on to the ducts of the electrostatic precipitator where solids are collected.

Each day the ducts must be shaken down into a hopper allowing chemicals to be discharged into a dump, company spokesmen said.

**Substitutes** — Bethlehem Pacific Coast Steel Corp. has met the smog problem by substituting electric furnaces (one 50-ton and another 75-ton) for the openhearths, retaining the latter on a standby basis.

Kaiser Steel Corp. has remained out of the smog question because it is located near Fontana, across the Los Angeles County line in San Bernardino County where there are no such regulations.

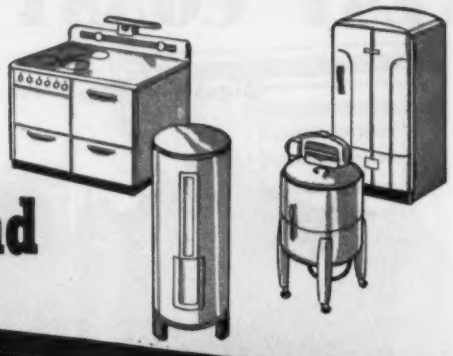
**Fabricators Absorb Price Hike** —Indications are that recent price increases in steel made by warehouses will have little effect on the ultimate western consumer for some time. This is especially true in the field of fabrication. Most fabricators plan to absorb the price increases on whatever items they have to purchase from warehouses because competition on every job is so keen.

**Greater Pressure** — These price increases will cause steel fabricators to place even greater pressure on mills for delivery.

Mills here now take about 60 days for delivery on many structural orders. It is this delay which is likely to keep the fabricators buying regularly from the warehouses even though they must absorb the price differential.

**Massive Machines**—Giant fabricating machines are being installed by Lockheed Aircraft Corp. in Burbank, Calif., to handle the tougher metals now used in modern jet aircraft. Use of 75 ST aluminum alloy and other tough metals in plate thicknesses makes it necessary to have larger equipment, company officials said.

The company is installing the massive machines first and will construct a building around them later. With Lockheed engineers overseeing the job, the Union Steel Co. will be the largest contractor for fabrication work.



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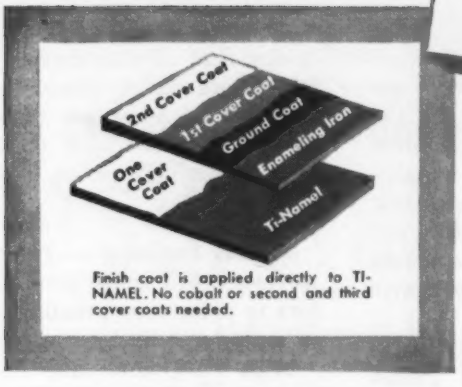


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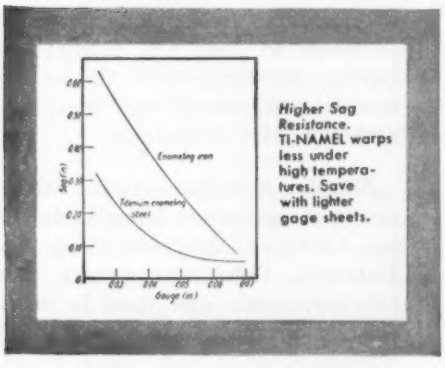


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# Tests Prove Worth of COLD EXTRUDED BOLTS

By **A. S. JAMESON**
Supervisor,
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**S. A. SHERIDAN**
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Cold headed, double extruded hexagon head bolts are more economical to manufacture than the quenched and tempered variety. Method of manufacture, mechanics of cold working, and the effect of reheating on the microstructure and physical properties of cold worked bolts are discussed in this first part of a two-part article.

INDUSTRY is constantly striving to secure the best possible parts or products at the lowest possible price. The over-perfection of parts, or plain over-designing, just to be safe is not permitted when such design has no functional significance or use. The principal objectives in all realms of engineering are to (1) find the actual operating stress to which the part is subjected in service, and (2) secure the most economical material and manufacturing method to produce a satisfactory part which will safely meet service requirements.

Bolts are no exception. Millions of bolts are used annually in thousands of different applications. About 80 pct of all hexagon head bolts, commonly called cap screws, currently used in automotive, implements and similar equipment are heat treated to meet specified mechanical properties. Considerable research has been devoted to finding a more economical bolt which would meet specifications without the expense of heat treatment.

Very recently, SAE has emerged with a recommended practice which includes bolts of this type, made of cold worked carbon steel with the shank double extruded. New boltmaking machinery permits mass production of such bolts and it is believed that many bolts of this type eventually will be used. Some mechanical properties of the new bolting, classified as Grade 3 in the latest SAE recommended practice, are shown in Table I. Grade 3 bolts are to a degree

competitive with the more expensive quenched and tempered Grade 5 bolts as will be seen by comparison with the data in Table II.

Comparisons made are on the properties of ½-in. bolts 13 threads per in. (coarse thread) cold worked, double extruded, rolled thread, hex head, against quenched and tempered bolts of the same size and chemistry. They are made from annealed and cold drawn wire ranging in carbon from 0.30 to 0.45 pct, with Mn from 0.60 to 1.00 pct. The cold worked bolt can only be used in sizes less than ⅝ in. diam and in lengths under 6 in. Bolts heavier in section and longer than 6 in. must still be heat treated to meet the required properties.

Although engineers have a choice of using either type of bolt, questions arise as to the engineering advantages inherent in each. Cold worked Grade 3 bolts are cheaper to make because the heat treating step is eliminated.

In order to obtain the required properties in the finished bolts, the properties of the wire from which the bolts are made must be controlled. The greater the degree of cold work given the wire and bolts the higher will be the yield and tensile strength of the bolts and the lower will be the ductility or plasticity. The limiting factors which control the degree of cold work are that the wire must be capable of being headed without damage to the head and the bolt must retain enough residual plasticity to meet the 10° wedge test, or to maintain a gap between the yield and tensile strength. In order to successfully produce satisfactory bolts, minimum and maximum hardness limits must be set up for the wire.

A typical example of hardness behavior was investigated. A 0.527-in. diam wire of 0.38 C, 0.82 Mn, was used to manufacture ½ in.-13 x 1¾ in. hexagon bolts. Hardness tests taken on a complete longitudinal section of the wire corresponding to step 1 in the manufacture, Fig. 1, ranged from 92 to 96 RB. After the first extrusion, step 2, the hardness increased to 94 to 98 RB. Here the diameter was reduced to 0.491 in.

After the second extrusion, step 3, the hardness increased again to 97 to 100 RB, the diameter being reduced to 0.447 in. or 28 pct from the original wire diameter. In this third step the head was formed and hardness in headed section was from 98 to 104 RB. This indicates that the greatest amount of cold work occurs in the head. This is the limiting factor with reference to induced cold work in wire drawing for cold heading. The head was sound and showed no fracture. This would indicate that a third shank reduction could be made, but it must be borne in mind that the shank gets a further reduction in roll threading. Furthermore, the life of the extruding dies would be reduced to such a degree that the process would no longer be economical.

Having the assurance of properly cold drawn wire, this is fed into the cold-heading machine, undergoing the successive steps shown in Fig. 1. The bolt when roll threaded (green bolt) may be considered a finished product, or it may be aged, or quenched and tempered.

The amount of cold working in the production of bolts is limited. Annealed steel contains a maximum amount of inherent ductility or ability

TABLE I

MECHANICAL PROPERTIES OF EXTRUDED BOLTS

SAE Grade 3.

| Bolt Size, in. | Proof Load, psi Min. (Mandatory) | Yield Strength, psi Min. (Informatory) | Tensile Strength, psi Min. (Mandatory) | Ratio of Tensile to Yield Strength, pct Min. (Informatory) | Hardness (Mandatory where tensile testing is not feasible) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Bhn | | Rb | |
| | | | | | Min. | Max. | Min. | Max. |
| ½ and under | 85,000 | 96,000 | 110,000 | 115 | 207 | 269 | 95 | 104 |
| ½ to ⅝ (incl.) | 80,000 | 87,000 | 100,000 | | | | | |

TABLE II

MECHANICAL PROPERTIES OF HEAT TREATED BOLTS

SAE Grade 5.

| Bolt Size, in. | Proof Load, psi Min. (Mandatory) | Yield Strength, psi Min. (Informatory) | Tensile Strength, psi Min. (Mandatory) | Ratio of Tensile to Yield Strength, pct Min. (Informatory) | Hardness (Mandatory where tensile testing is not feasible) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Bhn | | Rb | |
| | | | | | Min. | Max. | Min. | Max. |
| ½ and under | 90,000 | 109,000 | 125,000 | 115 | 255 | 321 | 25 | 34 |
| Over ½ to ¾ (incl.) | 85,000 | 104,000 | 120,000 | | | | | |

FIG. 1—Various stages in the manufacture of cold worked double-extruded bolts are: (1) wire cut to length; (2) shank single-extruded; (3) head buttoned and shank double-extruded; (4) head trimmed to hexagon shape; (5) shank pointed; and (6) roll threaded.

to be cold formed without fracture. If too much of this is used up in initial cold working less remains available for subsequent cold working in the fabrication of a part. In working, the internal structure of the steel is disturbed, with an accompanying increase in yield and tensile strength and a lowering of the ductility.

By reheating the steel the disturbed internal structure assumes a more regular order, increasing in regularity as the temperature increased. The beginning temperature of the rearrangement depends on the total amount of the cold work the steel has undergone. The effect of this in mechanical terms is that the yield and tensile strength and hardness decrease and the ductility is restored.

The maximum increase in mechanical strength on reheating occurs at about 600°F. This increase in hardness and decrease in ductility is caused by accelerated aging. Aging takes place slowly in cold worked ferrite at room temperature. Presumably, it occurs by rejection from solution of carbon, oxygen or nitrogen which is dissolved in small quantities in the ferrite. Raising the temperature of the cold worked steel to about 600°F merely accelerates this precipitation. Aging effects are submicroscopic and cannot be recorded by ordinary photomicrographs.

As the temperature of aging is raised beyond 600°F, softening, overaging, is again encountered until eventually the metal recrystallizes, an effect which is visible under the microscope and may be recorded by photomicrographs. Fig. 2 illustrates the changes in microstructure and hardness obtained by cold working and reheating a 0.40 pct C steel containing 0.70 pct Mn.

The original structure consists of more or less equiaxed grains of ferrite and pearlite obtained by slow cooling from 1680°F. After 50 and 70 pct cold reduction on one dimension the grains are distorted at right angles to the direction of stress application with an increase in hardness to 240 and 260 Bhn respectively. At some temperature between 1000° and 1100°F, there is visible recrystallization of the ferrite grains, with a drop in hardness. The pearlite remains distorted, although it begins to take a spheroidal form at about 1200°F. Between 1300° and 1400°F these carbides go into solution and in cooling slowly, again return to the equiaxed pearlite structure.

Specifications for Grade 3 and Grade 5 bolts are largely based upon tensile, hardness and other physical tests. Tests commonly related to tensile tests are proof load, yield, ratio of tensile to yield, wedge, and elongation. All of these have been considered as criteria for comparison. Some of these overlap into so-called ductility tests, for instance the ratio tensile to yield, wedge and elongation. Other common ductility tests are bending, twisting and transition-temperature

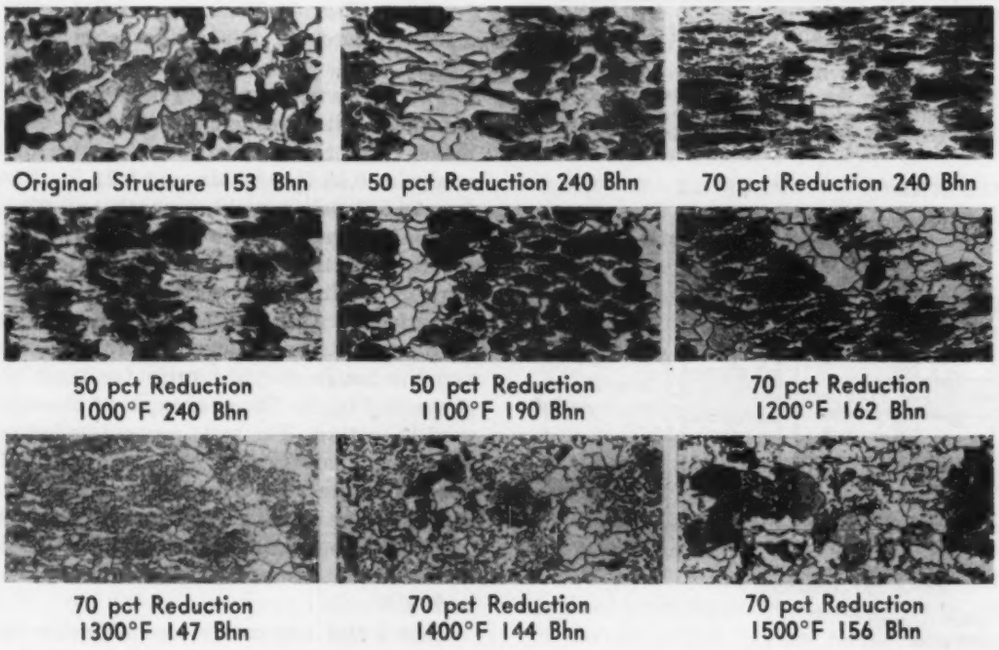


FIG. 2—Microphotos showing effect of the reheating temperature on the micro-structure and hardness of cold worked 0.40 pct C steel. The grains become distorted and hardness increases from the cold working. Upon reheating, the ferrite grains recrystallize and hardness decreases, and the pearlite finally assumes the original equiaxed structure. Nital etch .200X.

Continued

testing. Another testing criterion is fatigue, which is also considered among the substantiating mechanical tests performed.

The first series of tests was run on ½ in.-13 x 1½ in. hexagon head bolts double extruded from material which analyzed 0.39 C, 0.72 Mn and 0.16 Si. The original wire was 80,000 psi in yield strength and 98,000 psi in tensile, and the ratio of the tensile to the yield was 121 pct, at a hardness of 95 RB. The yield and tensile data for bolts made from this wire are shown in Fig. 3.

In this first series, the yield strength was determined at 0.2 pct offset from an autographic chart recording, with extensometer activated by the movement of the gripping mechanism, as shown at left of Fig. 4. It has become conventional, by standard specification, to use three unengaged threads in tensile testing. The number of unengaged threads affects the yield, tensile and elongation values. This effect will be discussed later.

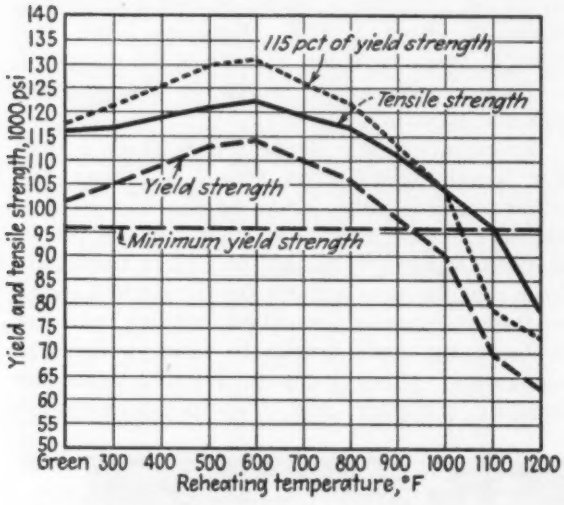
115 pct of yield strength
Tensile strength
Yield strength
Minimum yield strength
Yield and tensile strength, 1000 psi
Reheating temperature, °F
Green 300 400 500 600 700 800 900 1000 1100 1200

FIG. 3—Effect of the reheating temperature on the yield and tensile strengths of cold headed bolts, using the old method of extensometer attachment.

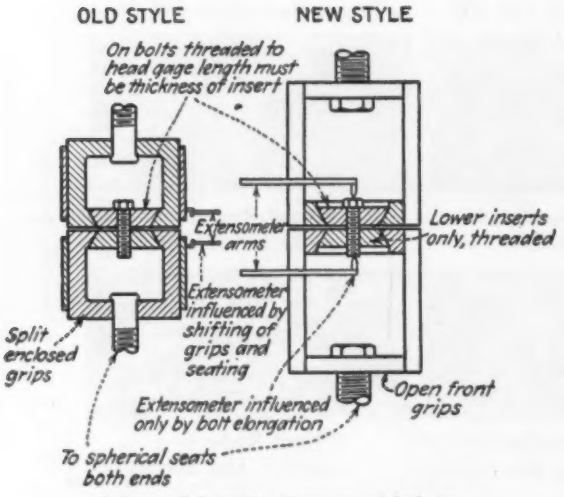
OLD STYLE
NEW STYLE
On bolts threaded to head gage length must be thickness of insert
Extensometer arms
Lower inserts only, threaded
Extensometer influenced by shifting of grips and seating
Split enclosed grips
Extensometer influenced only by bolt elongation
Open front grips
To spherical seats both ends

FIG. 4—Schematic diagram of bolt extensometer attachment, showing old and new method of locating extensometer arms for bolt yield strength determination.

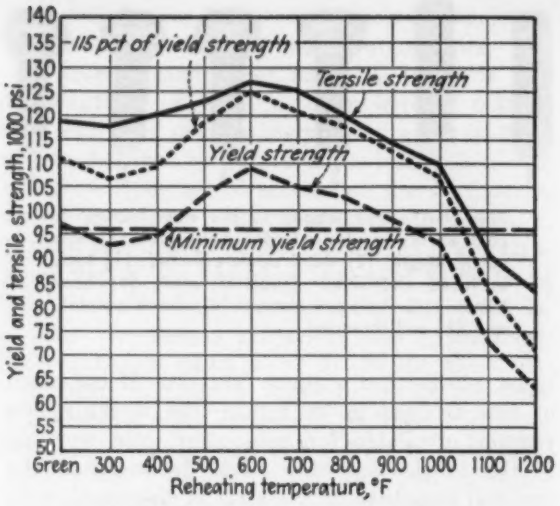
115 pct of yield strength
Tensile strength
Yield strength
Minimum yield strength
Yield and tensile strength, 1000 psi
Reheating temperature, °F
Green 300 400 500 600 700 800 900 1000 1100 1200

FIG. 5—Effect of the reheating temperature on the yield and tensile strengths of cold headed bolts, using the new method of extensometer attachment.

From Fig. 3 it is apparent that the minimum yield and tensile strength under axial loading is met as-headed and at all reheating temperatures from 300° to 900°F, with a peak occurring at 600°F. The ratio of tensile to yield strength, however, was less than 115 pct.

In running a second series of tests, a new method of measuring yield was devised which locates an extensometer on the top of the head and on the threaded end of the bolt. The new method of locating the extensometer is also illustrated in Fig. 4. This was coupled with a responsive recorder for autographic load-strain curve.

This series was run on ½ in.-13 x 1½ in. hexagon head bolts, double extruded. The bolts were made from cold drawn wire of the following analysis: 0.35 C, 0.81 Mn and 0.21 Si. The wire was 78,800 psi in yield strength and 91,400 psi in tensile strength. The ratio of tensile to yield calculated to 116 pct. Elongation obtained on this wire in a 2-in. gage length was 16 pct and the reduction of area was 50 pct at a hardness of 90 RB or 187 Bhn. The yield and tensile strength and the tensile to yield ratio for these bolts is given in Fig. 5. Three unengaged threads were used in testing. The tests covered as-headed and reheating temperatures from 300° to 1200°F. The minimum yield and tensile strength under axial loading and the minimum ratio of 115 pct of tensile to yield strength are met in the as-headed and at reheating temperatures from 500° to 900°F.

Figs. 3 and 5 by comparison illustrate the sensitivity of yield strength to the method of attachment of the extensometer. For accurate results it is considered best to standardize upon the new method of attachment shown in Fig. 4.

# Cast 12% Chrome Steels

## PROVED IN GAS WELLS

By J. W. JUPPENLATZ
Chief Metallurgist,
Lebanon Steel Foundry,
Lebanon, Pa.

**Greater safety, uninterrupted service and savings running into millions of dollars have resulted from cooperative research in the gas-condensate industry. Gas well christmas-tree fittings made of cast 12 pct Cr alloy steel were found to be the ideal solution to the problem of severe corrosion.**

AMONG major difficulties encountered in operation and maintenance of the nation's vital oil and gas fields, the problem of combating and controlling corrosion in gas-condensate well equipment ranked foremost. In 1943, when the wartime demand for petroleum products reached its peak, a wholly unexpected and vicious type of corrosion was discovered.

Christmas-tree fittings and well-head lines were found to be undergoing serious attack by a selective pitting type of corrosion after service of only a few months or even a matter of days. Vital control parts operating under extremely high internal pressures were so badly cavitated that internal forces caused a piercing rupture. A typical example of corrosive failure in such condensate well-head parts is shown in Fig. 1.

The fittings were being made of carbon or low alloy cast or wrought components. Failure of these fittings by an unpredictable type of corrosion constituted cause for alarm among petroleum engineers.

Factual data hastily assembled by the gas-condensate operators showed that corrosive conditions existed in many producing areas. Some gas wells on preliminary examination showed no corrosive attack, while later examination revealed that rapid attack occurred, indicating that corrosive attack was not constant. In addition to the irregular results of surveys, corrosive attack of equipment was quite selective. Spot accelerated corrosion occurred in certain areas, while adjacent parts were relatively immune.

It was soon established that corrosive conditions in certain gas-condensate wells could literally destroy vital control parts of christmas-tree equipment in as little as 30 to 90 days of service. It also became apparent that the rapid corrosive attack was not confined to christmas-tree parts alone; severe corrosion had also extended underground to great depths, destroying thousands of feet of tubing and tube casing.

Gas-condensate wells differ principally from oil wells in their larger ratio of gas to liquid, such as 1000 cu ft of gas to 1 gal of oil. Some water is produced along with the hydrocarbon compounds. Many organic acids are present,[1] such as acetic, butyric, valeric and propionic acids and varying amounts of carbon dioxide gas. Corrosive condensate wells showed relatively high percentages of carbon dioxide and often, high organic acid content.

Very high pressures are encountered at the top of the hole, ranging from about 2000 to 8000 psi with depths of 5000 to 14,000 ft or more. These wells also showed relatively high reservoir temperatures of about 200°F, or about 135°F at the well head. These temperatures undoubtedly accelerated corrosive attack.

In a majority of cases, the corrosion was found to be of a pitting nature rather than in any form of overall attack. This corrosion-erosion was most severe where nipples were present, or where pockets existed to create localized turbulence by the extreme velocity of gas flow.

This form of corrosion, shown in Fig. 2, was

very rapid and occurred without warning. The high pressure wrought tubing was also found to be seriously attacked in a selective manner near upsets or joints where turbulence was effective, resulting in circumferential cavitation, sometimes referred to as ringworm attack. This necessitated periodic shutdown of the well to dismantle and make visual inspection.

Technical committees of the National Assn. of Corrosion Engineers and the Natural Gas Assn. of America felt that proved choice of corrosive-resistant metals could effect a solution to the problem. It was decided to select 32 metals and alloys for field tests, placing these metal samples on insulated test rods under actual service conditions. Seven of these test containers were prepared for placement in various gas-condensate wells located in Texas and other surrounding districts, under the auspices of NACE, NGAA and with the cooperation of condensate producers.

While these test containers were being prepared, the Bureau of Mines[2] started laboratory investigation, using several of the same test metals with the aid of incoming data by the NGAA and NACE committees.

Fig. 3 shows the corrosion rate in carbonic acid as affected by increasing alloy content. The overall corrosion loss is expressed in mils per year based on weight loss and shows decreased corrosive attack with increasing alloy content. The maximum pitting and edge effect is also indicated after 14 consecutive 7-day test periods which show higher destructive rates when compared with weight loss figures.

FIG. 1—Carbon steel choke valve components before (right) and after service (left) in a corrosive well for 30 to 45 days. External and internal corrosion have resulted in almost complete removal of the nut member.

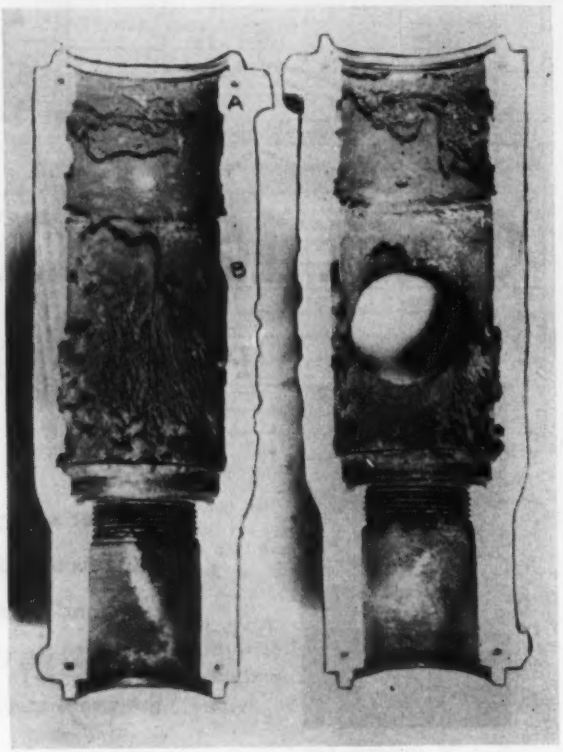


FIG. 2—Cast carbon steel christmas-tree fitting showing vicious corrosion-erosion attack caused by turbulence and velocity.

Pitting attack is of major importance when evaluating materials for high pressure service requirements and this type of corrosion constitutes a major proportion of condensate corrosion failures. This laboratory pitting attack after 98 days of test is not accelerated by turbulence, which is ever present in actual condensate service. Importantly, this series of tests indicates a reduction of pitting when alloyed with either chromium or nickel, with the most favorable reduction for the chromium grades of alloy steel.

A similar series of laboratory tests was conducted using propionic acid as the corrodant under conditions shown in Fig. 4.

During the early surveys of condensate well conditions, a few choke valves made from Lebanon Circle-L 12 (cast 12 pct Cr) were in existing field service. Examination of adjacent wellhead equipment indicated some of the wells to be definitely corrosive, but the 12 pct Cr fittings proved satisfactory in actual service. This service information, coupled with data from the Bureau of Mines, indicated that the Circle-L 12 cast materials provided a probable key to the corrosive problem, at least for christmas-tree fittings. This gave the petroleum engineer a brief respite until further conclusions followed.

The NACE-NGAA field test container results, after a 90-day trial under carefully observed and recorded conditions were being reported.[3] A reasonable degree of correlation between laboratory

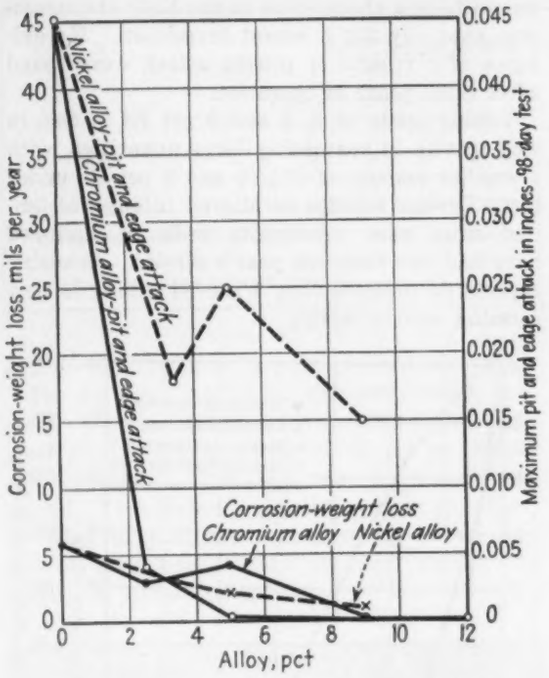


FIG. 3—Laboratory corrosion tests performed with an aqueous solution of carbonic acid, under 200 psi carbon dioxide at 130°F. Data, Bureau of Mines.

and field tests was indicated when allowances were made for the effects of velocity and turbulence as associated with high service pressures which accelerated the corrosion-erosion effects.

Results of the seven NACE-NGAA 90-day field tests are plotted in Figs. 5 and 6. Fig. 5 includes a series of straight chromium steels plotted as 0, 2¼, 5, 9, and 12 pct Cr, with 18-8 chromium-nickel alloy as an extreme against overall corrosion and pitting effects. Because two of the seven condensate wells in the program were not considered corrosive at the time of test, the minimum, average and maximum corrosion rates are plotted in mils per year of weight loss in relation to the chromium alloy content. The pitting and edge

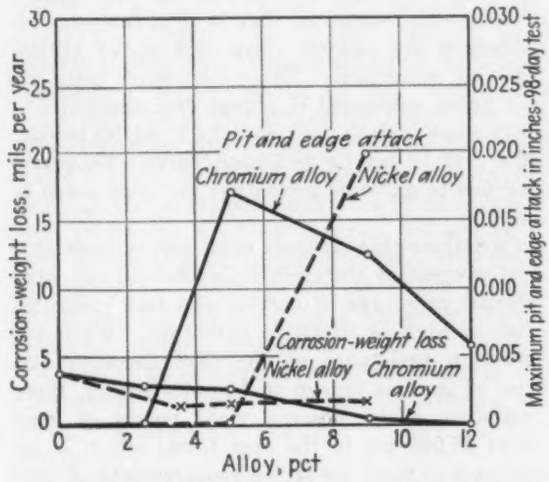


FIG. 4—Results of laboratory corrosion tests performed with an aqueous solution containing 200 ppm propionic acid at 130°F. Data, Bureau of Mines.

attack rate is again significant, and the maximum depth of localized attack for any one specimen of any alloy group is plotted in 0.001 in. increments for the 90-day test period.

### Charts Further Explained

Numerical pitting rates were reported, but values for pitting edge attack were only indicated by the degree of severity. Factors for this attack were included in the total pitting and edge attack value, and this method appears to be justified in portraying actual conditions, since edge attack produced complete perforation of samples without appreciable pitting. The pitting and edge attack would continue at an indefinite rate, showing that this type of attack promotes rapid failure for metal and alloy groups.

The frequency of pitting and edge attack is also shown in percentage, since all specimens of any groups (four of a group in each test container) did not always reveal pitting attack. Increased alloy content definitely decreases the pitting frequency, as shown by the curve indicating percentage of specimens pitted, Fig. 5.

This same graphical presentation shows that the overall resistance to corrosion increases with increase in the chromium alloying content, and that at a level of 9 pct or more chromium, corrosion resistance should be satisfactory. The Circle-L 12 cast alloy, as tested in comparison with the wrought equivalent, shows improved resistance to corrosion and pitting, about equal to the 18-8 chromium-nickel type alloy in these services. The variance between the cast and wrought grades is considered to be caused by differences of physical properties and microstructure.

Fig. 6 shows relative corrosive effects in the seven condensate wells with respect to use of increasing range of nickel contents—0, 3½, 5 and 9 pct. When compared to the chromium series, the overall rate of attack is materially reduced with 3.4 pct Ni, and the degree of corrosion resistance continues to improve with use of 5 and 9 pct Ni grades.

A given percentage of nickel is more effective than the same percentage of chromium when overall weight loss attack is considered, while effect of pitting and edge attack on nickel alloys is generally higher than in the chromium series, with about the same percentage of the specimens being attacked. Some of the specimens of 9 pct or more chromium or nickel, or the 18-8 type, showed no significant corrosive attack in known corrosive wells, and this pitting frequency curve exemplifies these conditions.

This phase of the research program indicated the degree of performance that could be expected with alloy usage. However, the gas producers had numerous corrosive type wells in production fitted with carbon steel tubing, casing and christmas-tree parts, in questionable operating conditions.

There remained the pressing question of what

could be done to extend the life of existing regular steel equipment that represented millions of dollars of original investment. The economics of the problem were truly staggering.[4] Inhibitors, plastic coating and plating of parts were considered. Inhibitors such as chromates,[5] soda and ammonia were tried. These were effective in reducing corrosion rates, but frequently caused a plugging of the tubing annulus, ultimately reducing the gas flow rate to a mere trickle. The well then required costly reworking in addition to the expense of chemical injections.

Other organic inhibitors have been employed without plugging effects. More recently, the use

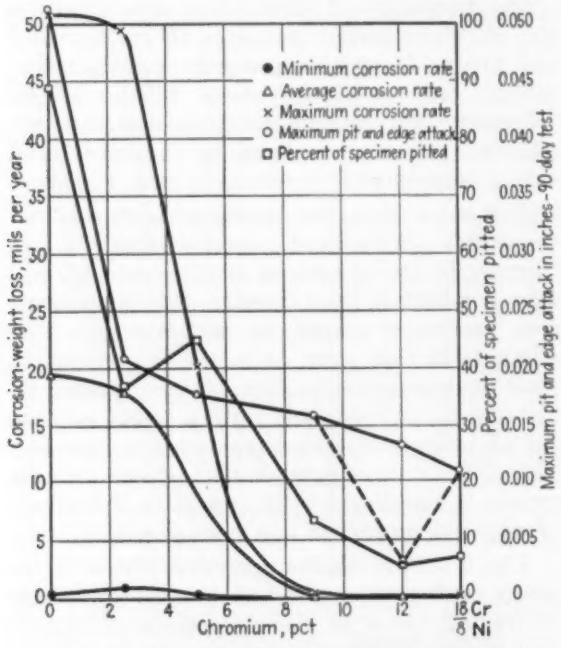
Minimum corrosion rate
Average corrosion rate
Maximum corrosion rate
Maximum pit and edge attack
Percent of specimen pitted
Corrosion-weight loss, mils per year
Percent of specimen pitted
Maximum pit and edge attack in inches-90-day test
Chromium, pct
18 Cr / 8 Ni

FIG. 5—Results of field tests on various grades of steels and chromium alloys, showing overall corrosion and pitting rates. Test period, 90 days.

of wetting agents[6] has been studied to develop surface oil film on internal steel surfaces to reduce corrosion. All of these methods are expedients to increase the life of existing equipment requiring costly servicing attention in operation.

Chromium and nickel alloy tubing of varying alloy content subsequently has been placed in wells, and christmas-tree fittings made from Circle-L 12 cast 12 pct Cr have established proven service records of more than three years without any corrosive failures. Fig. 7 shows a complete christmas-tree control unit made of the 12 pct Cr material. This equipment is in operation in the Katy, Texas, field, and corrosive conditions in the particular gas-condensate well are reputed to be the worst encountered to date. Today, after periodic inspections, all the well-head equipment is in excellent condition and shows no perceptible corrosion after three years of service.

Typically a 12 pct Cr stem and seat was removed from a choke valve on the Katy christmas-tree assembly for a recent inspection. No evidence of corrosive or pitting attack were found after three years of operation.

Tubing made of 3, 5 and 9 pct Ni is also in well service in reasonably large quantities, with a smaller amount of 2¼, 5 and 9 pct Cr under test. Service reports on alloyed tubing are limited since most condensate wells so equipped have had less than one year's service. Available reports do indicate that 9 pct Ni tubing is performing satisfactorily.

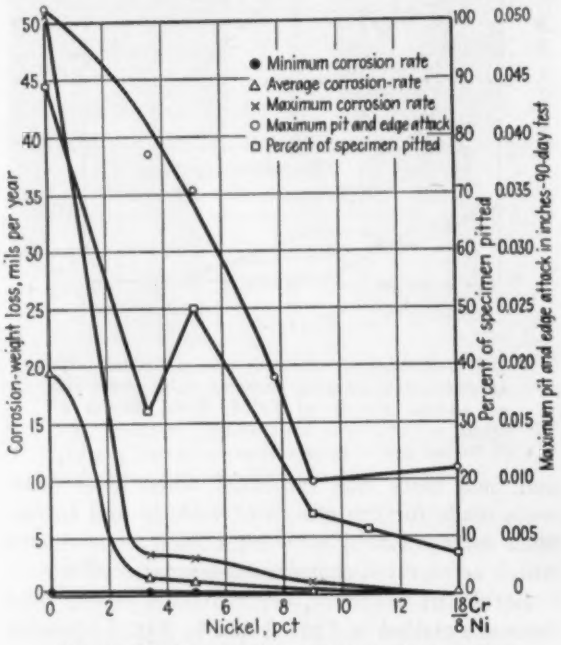
Minimum corrosion rate
Average corrosion-rate
Maximum corrosion rate
Maximum pit and edge attack
Percent of specimen pitted
Corrosion-weight loss, mils per year
Percent of specimen pitted
Maximum pit and edge attack in inches-90-day test
Nickel, pct
18 Cr / 8 Ni

FIG. 6—Results of field tests on various grades of steels and nickel alloys, showing overall corrosion and pitting rates. Test period, 90 days.

Wrought carbon and 9 pct Ni steel, and 12 pct Cr cast alloy steel were tested as shown by Table I. These tests do not indicate that galvanic corrosion seriously affects the corrosion rates under these conditions. They do indicate that cast 12 pct Cr steels possess the very high degree of corrosion-resistance that is a paramount requirement for control valve services of christmas-tree assemblies. These laboratory tests are now being confirmed in actual field applications, since some installations contain 9 pct Ni tubing, with cast 12 pct Cr well-head parts. No corrosion due to galvanic action has yet been noted to date.

Christmas-tree castings must also possess physical properties sufficient to withstand the high internal pressures of service and test pressures often as high as 10,000 to 15,000 psi. While the corrosion resistance of the 18-8 chrome-nickel type of steel is known to be satisfactory, these austenitic alloys possess yield points of only about 35,000 psi in the cast form, which is inadequate to meet the stress requirements of high pressure service. Fittings made from the austenitic alloy also would be impractical because of the cumbersome size of flange and thickness of

TABLE II

## SPECIFICATIONS FOR CAST CIRCLE-L 12

| Grade | Chemical Composition, Max.* | | | | | | | | Physical Properties, Min. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C | Mn | Si | P | S | Cr | Ni | Mo | T. S., 1000 psi | Y. P. | Elong. in 2 in., pct | Red. of Area, pct | Hardness Bhn max. |
| Normal API | 0.15 | 1.00 | 1.50 | 0.04 | 0.04 | 11.5-14.0 | 1.00 | 0.50 | 90 | 65 | 18 | 30 | 241 |
| Hardened and Tempered | Same | | | | | | | | 105 | 85 | 17 | 35 | 270 |

* ASTM Specification A-296-49T, Grade 10.

wall section required for high pressure design.

The 12 pct Cr alloy on the other hand, possesses excellent physical characteristics, with yield points ranging from 50,000 psi to 160,000 psi, depending upon the heat treatment employed. This makes it possible to cast the 12 pct Cr alloy in standard fitting designs, and also affords interchangeability of parts having the necessary factors of safety.

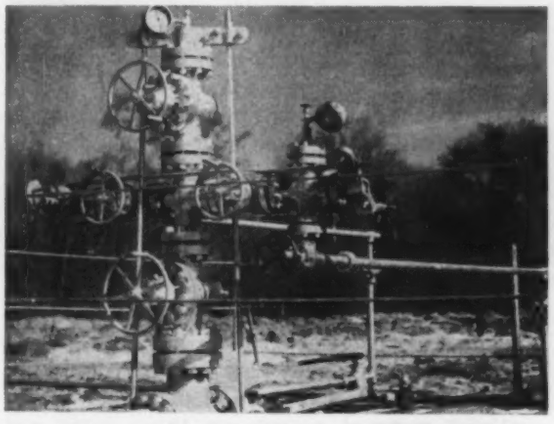

FIG. 7 — Complete christmas-tree assembly of valves and fittings made of cast 12 pct Cr steel, in service at Katy, Texas, corrosive gas-condensate field for 3 years without failure.

Specifications of the cast Circle-L 12 alloy are shown in Table II. These data are of fundamental importance to the design engineer, since operating pressures of gas-condensate wells have approached higher levels as well depth has increased. Since the 12 pct Cr alloy is of the hardening type, a wide range of mechanical properties may be developed within a range of 135 to 375 Bhn. Corrosion resistance in all forms of heat treatment has been checked and is considered to be adequate for all christmas-tree applications. The resulting microstructure as produced by heat treatment, is a recognized factor affecting corrosion resistance.

Presence of concentrated ferrite pools in the microstructure are somewhat detrimental to maximum corrosion resistance. Therefore, heat treatment such as full annealing, which tends to reject ferrite, is not recommended for this specific service. The effects of annealing heat treatment were indicated by comparative corrosion rates of cast Circle-L 12 versus wrought 12 pct

TABLE I

## AVERAGE CORROSION RATE*

Weight Loss, Mils Per Year

| Specimen Series | Propionic Acid | | Carbonic Acid | |
|---|---|---|---|---|
| | Metals Apart | Metals Coupled | Metals Apart | Metals Coupled |
| Carbon Steel | 4.4 | 3.1 | 17.4 | 21.8 |
| 9 pct Ni | 4.1 | 0.99 | 33.0 | 11.5 |
| Carbon Steel | 5.3 | 4.4 | 39.0 | 42.0 |
| Cast 12 pct Cr | 0.3 | 0.3 | 0.8 | 0.8 |
| 9 pct Ni | 5.9 | 2.9 | 47.0 | 31.0 |
| Cast 12 pct Cr | 0.2 | 0.3 | 0.5 | 0.9 |

* Fourteen 7-day test periods.

Cr, Fig. 5, by the maximum pitting and edge attack curve. The wrought steel (solid line) was annealed to about 135 Bhn and the cast grade (broken line) was air-hardened and tempered to about 210 Bhn. In either state of treatment, the corrosion test rate was satisfactory.

With hardening and low temperature tempering treatments, hardness of about 375 Bhn may be expected. Internal valve control parts have been used in this heat-treated condition with excellent service performance. It is not recommended, however, that pressure-containing parts, such as fittings and valve bodies, be produced to hardness values in excess of 270 Bhn. In this condition of heat treatment, excellent damping capacity and ample impact resistance is retained. With this precaution of avoiding excessive hardness, corrosion fatigue qualities should be satisfactory for corrosive service.

### References


1. Organic Acids Produced by High Pressure Gas Wells, H. L. Lochte, C. W. Burnam, H. W. H. Meyer, The Petroleum Engineer, Aug. 1949.
2. Laboratory Determination of Relative Corrosion Resistance of Metals Considered for Gas-Condensate Well Service, C. K. Eilerts, F. Greene, F. G. Archer, L. M. Burman, C. Good, Bureau of Mines, NACE TP-1 Report, Annual Meeting 1948.
3. NACE Condensate Well Corrosion Data, H. T. Kennedy and J. G. Jewell. NACE. TP-1 Report, Annual Meeting 1948.
4. Corrosion—In High Pressure Gas-Condensate Wells—Gulf Coast Area, T. S. Zajac, The Oil & Gas Journal, June 21 and 28, 1947.
5. Sodium Chromates and Alkalies for Controlling Corrosion in Gas-Condensate Wells, C. K. Eilerts and Others, World Oil, July to Dec. 1949.
6. Influence of Oil in Subsurface Corrosion, W. F. Rogers, The Oil & Gas Journal, Dec. 15, 1949.

# Contour Machining

**Tooling costs for short run production of forgings and castings can be eliminated by making these parts with contour saws. Three dimensional cutting is being done and in cases such parts are stronger than those produced by regular methods.**

THE problem of fabricating identical parts in limited quantities, meaning short runs, is becoming more and more acute because of the many new and diversified products continually being developed. When it is realized that American industry mass produces less than 25 pct of the parts going into assemblies, there is no other choice but to accept the remaining 75 pct as short run requisitions whether it is in terms of 20, 200, 2000 or 20,000 units.

There are various short run production methods whereby actual tooling cost, as affecting cost per unit, can be minimized or even entirely eliminated. Obviously the choice of procedure depends on the nature of part and quantity involved. The fact remains, however, maximum economy can result only from ingenious planning and the lesser the quantity the more complexed becomes the problem. If and when this matter is brought up for discussion, the possibilities of contour machining should by no means be overlooked.

The production of short runs is of two distinct classifications and each truly deserves to be treated individually. This article concerns making certain parts in quantities so limited as to definitely exclude any thought of dies or patterns, or in connection with which other procedures are likely to render cost per unit excessive if not prohibitive. On the other hand, with metal stampings the volume is as a rule substantially higher and for this reason production engineers can solve this particular problem with either the conventional production die, Continental thin die process or finally by stack contour sawing. Either of these methods is bound to bring down actual cost per piece.

The economy of reproducing forgings with contour saws should be of prime interest because the process offers the only substitute for the forging die. A forging die should be what the name implies; any attempt to lower its cost with design in mind to machine certain cut-outs thus eliminated now seldom proves profitable. If quantity warrants, the die may as well be made to do a complete job. When estimated die cost proves unreasonable, as distributed over cost per unit, the parts can more economically be contour machined. It is obvious that the process has good possibilities, especially as related to short runs, experimental and replacement parts.

Reproduction forgings are contour cut from solid forgings or some steel alloy considerably tougher than would be used to similarly reproduce a cast part which in turn is much stronger than an actual casting. The contour machining process has a marked advantage over other methods, namely, three-dimensional cutting. And this is particularly true in relation to forgings.

A typical example of forging reproductions, one of many, is shown in Fig. 1. This three-dimensional application concerns only five parts which were contour machined from 2 in. special steel in 16 hr. Strangely enough, the work was executed by an operator who had less than a week's experience with this type of equipment. It will be noted that more than 90 pct of the material removed to cut out these parts was saved for other uses, in many cases the material spared from chips represents a value in excess of operating cost involved. A saving of $600 was effected over the former procedure by contour machining this five-unit requisition.

The reproduction forging application shown in Fig. 2 consists of sawing 50 parts to make 25 rotor blade wire-forming tools for jet engines. The parts are contour sawed to within 0.004 in. to 0.006 in. from the outline, then completed by bandfiling in the same machine. The material is high carbon steel.

Fig. 3 proves that there's practically no limit to the size of the piece that can be contour machined, providing material thickness is within the work height capacity of the equipment. The contour machining of diesel engine connecting rods has been for a decade and still is a common operation for the process. As a general rule, quantity is so limited that the rods must necessarily be machined from solid forgings. Some diesel engine connecting rods measure up to 8 and even 10 ft in length. Swinging the parts to saw a complete radius for the wrist pin bearing formerly presented quite a maneuvering problem, with limited open space. The operation

# Reproduces Forgings and Castings

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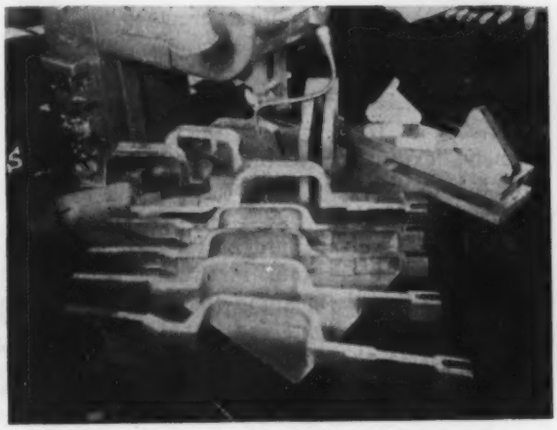

FIG. 1—A machine part of special steel analysis being contour cut at 95 fpm with a cutting rate of ⅝ lineal in. per min. The saw is a ¼-in., 10-pitch blade.

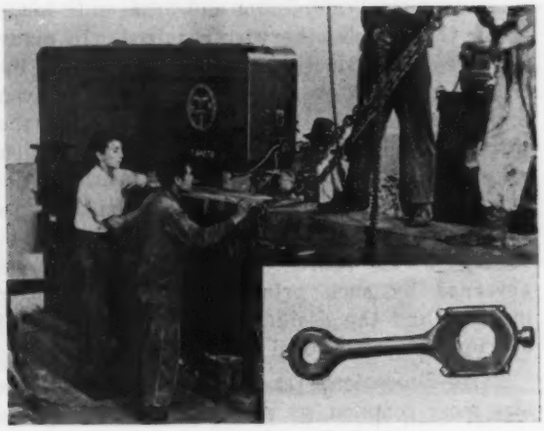

FIG. 3—Contour cutting of a diesel engine connecting rod from a forging. Rate of cut is ⅛ lineal in. per min. Blade speed is 50 fpm. The internal cut is done with a precision ¼-in. saw.

FIG. 2—Making a wire forming tool from high carbon steel. Same blade used as in Fig. 1 but cutting rate is 1.75 lineal in. per min at 125 fpm.

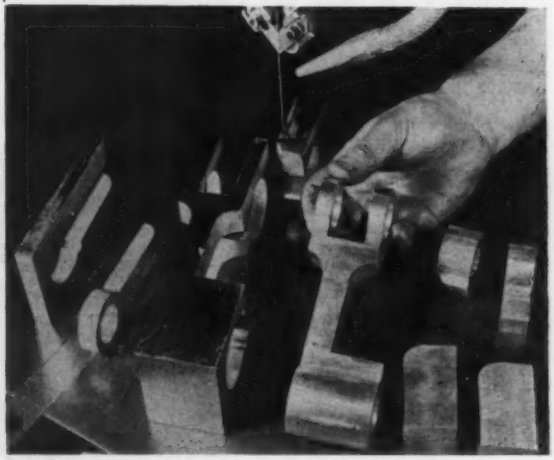

FIG. 4—Cutting rate of this aluminum brake part is limited only by intricacy of the cut. Blade velocity is 1500 fpm.

is now simplified for contour sawing such parts by bolting the machine to a circular steel plate fitted with rollers so it can be revolved 180° on a similar plate. The pivoting point is in line with the sawband and the work-holding fixture is adjusted accordingly.

The solid forging shown on the table, Fig. 3, weighs approximately 3 tons and is 10 in. thick. Four, 42 in. long connecting rods are to be contour cut from this piece of special alloy steel. The parts, as cut off from the bar, are well within the 60 in. throat capacity of the machine and

thus provide means of contour sawing out the bores as well as the external cuts. These connecting rods were previously flame cut but while the torch is much more productive than the saw on the thicker sections, in the long run contour machining is now found far more economical. Production time per piece is now estimated at 2½ days, whereas it took from 5 to 6 days because of so much handling and setup time.

Once the connecting rod has been completely contour sawed, with an allowance of 1/16 in. side stock on the bores, it only remains to conventionally finish the bores to size, turn, split wrist pin bearing and otherwise machine to complete the part as shown in the insert.

Castings are reproduced more economically than forgings because the material used, such as machinery steel, aluminum and brass cuts much faster than steels otherwise required. In many instances, reproductions because of their increased strength over actual castings are given the preference even though volume justifies the cost of pattern. In this connection, production engineers do not by any means overlook the economy of welded steel construction because this process also has its manufacturing advantages. In short, choice of procedure is governed by such prime factors as quantity involved and the design, which have a marked bearing on conventional machining costs.

Three-dimensional casting reproductions are also most common, as shown in Fig. 5. These parts are made in lots of 40 from 2 in. aluminum bar stock and measure 6 in. long. They are completely contour sawed, exclusive of the two ¾ in. holes which are previously drilled and reamed. To provide clearance for the ⅛ in. sawband, ¼ in. holes are drilled at intersections and inside or outside the layout line whichever the requirements. There are five cuts per piece and machining time is 90 min. Other typical examples of reproduction castings by contour methods are shown in Fig. 4.

Experience for maximum contour results, meaning the highest cutting rate possible consistent with accuracy, is secondary to having the proper cutting tool. It is only natural to assume that a narrow sawband, such as ⅛ in. so often used to execute complicated cuts, is a far more delicate tool than a ½ in. or ¾ in. band. The fact remains, however, width is immaterial, if the bands are specially processed for this kind of work and particularly heat treated accordingly. Such bands have two unique properties to resist contouring strains while cutting through the toughest of alloys. First, is differential toth hardness which provides a very hard cutting edge and in turn imparts the other property, namely, flexibility of teeth at the proper location, which maintains the set for practically the life of the band.

Another important preparatory step to simplify and speed contour machining work is a dependable layout, meaning that the lines must be exceptionally light and yet highly visible. This requires the use of a fluid or compound that is not easily abraded by chip action, not attacked by cutting oils, adheres evenly to polished or ground surfaces and of a deep blue color to provide the desired contrast to scribed lines.

FIG. 5—Cutting a tool steel cam at ⅞ lineal in. per min. Blade is ⅛ in., 14-pitch, traveling at 175 fpm.

# Precision Stainless Parts
## BY POWDER METALLURGY

By **A. J. LANGHAMMER**, President,
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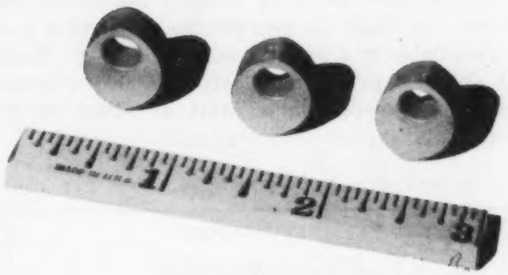

FIG. 1—Preheat valve cams for aircraft engines have been successfully made from stainless powder.

Manufacture of some stainless steel precision parts through powder metallurgy saves some 75 pct of production cost over standard machining methods. Good stainless powder is key to successful fabrication of machine parts, filters and bearings.

SOME fabricators still claim they have yet to produce a satisfactory stainless part due to the lack of good stainless powder. The Amplex Mfg. Co., subdivision of Chrysler Corp., however, is a notable exception.

This company has been in commercial production of stainless type 302 precision parts for almost a year and is fanning out into new applications in many fields.

Production at Amplex includes Oilite stainless bearings, filters and machine parts. The company's largest production runs to date have been on the preheat valve cam for aircraft engines shown in Fig. 1.

The cam is made by conventional briqueting, and sintering methods, after which the ID of the bore and the outside contour are cold sized. The tolerances being met are shown in Fig. 2. The 18 Cr, 8 Ni stainless powder part costs 6¢ each compared to about 25¢ each when machined from wrought stainless. Modifications in compacting pressures and sintering temperatures were found necessary in making this part. The pressures used in compacting are about 50 pct higher than normal. The green strength of the pressed part is equivalent to that obtained in ordinary production of the common part made from other metal powders.

The advantages of stainless precision parts are many. They do not contaminate metallically and are easy to clean. As in many other stainless applications, they are tops for decorative purposes. Problems such as corrosion and oxidation are minimized.

Typical machine parts that have been made with stainless 302 powder are shown in Fig. 3. A porosity of about 10 to 15 pct permits impreg-

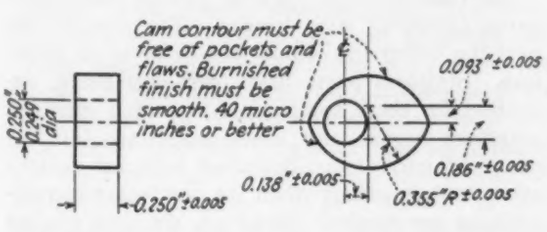


FIG. 2—Dimensional tolerances as close as 0.001 in. were held in the fabrication of the preheat valve cams.

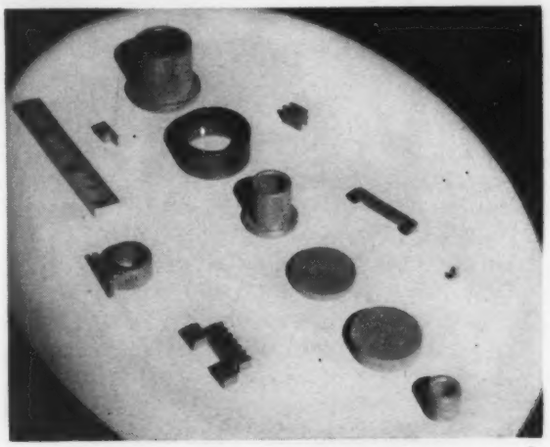

FIG. 3—Inherent porosity of these typical stainless powder metal parts permits impregnation with oil for self lubrication.

nation with oil for self lubrication when desired. Stainless bearings used in food and beverage machinery are impregnated with a white non-contaminating oil. This assures longer, trouble-free life of the machine and precludes the old bugaboo of contamination of the product passing through the machine.

Other applications in the pharmaceutical, dairy, and fruit juice industries are increasing. Amplex has run machining tests on pressed powder stainless and has found that this material may be readily bored, turned, faced, threaded and even knurled, see Fig. 4. Carbide tools are required for successful machining.

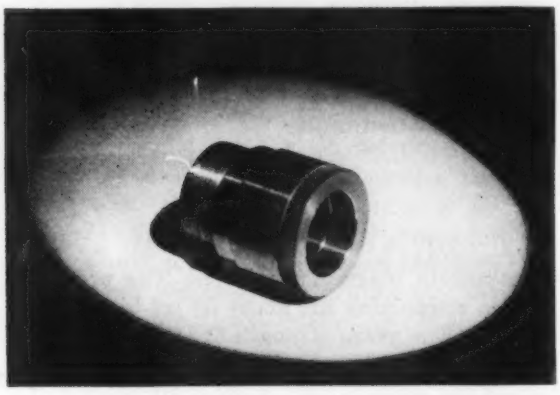

FIG. 4—Pressed powder stainless parts may be readily bored, turned, faced, threaded and knurled.

Filters have long been a popular powder metal application. Stainless steel filters now offer attractive advantages in this field. Extreme fineness of pore size is a normal characteristic. Pore openings are measured in terms of microns (1/1000 of a millimeter or 0.000039 in.).

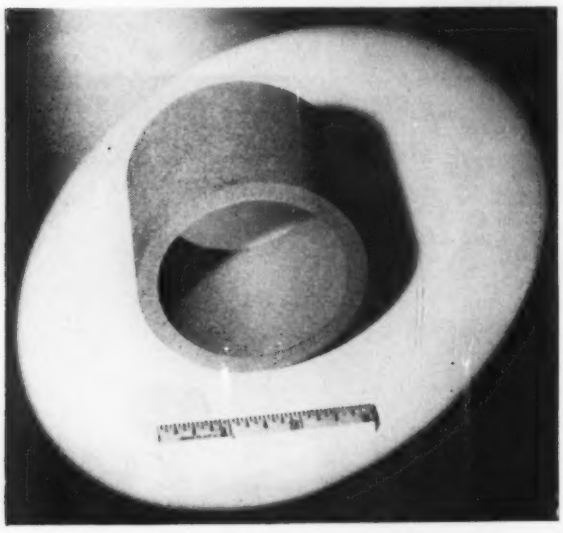

FIG. 5—Tubular, stainless powder metal filters are capable of separating particles from 10 to 1000 microns in size.

A very recent application in the tubular shaped filter is shown in Fig. 5. This filter is used to separate catalysts from solutions. These parts are assembled into units 48 in. long. A hub is ground and counterbored to form a tight joint between the individual parts which make up the long, tubular filter. This filter operates at 750°F and separates out particles from 10 to 100 microns in size at a differential pressure of 15 psi. It is anticipated that such filters may eventually be pressed in lengths up to 6 in. long.

Typical properties of the filters, bearings and precision parts made by Amplex appear in the tables. In Table II, two grades of particle size are available in a fine and coarse powder. Table III shows a pv factor of about 20,000 whereas the brass powder parts start at about 50,000 and go up.

TABLE I

PRECISION PARTS

| | |
|---|---|
| Tensile strength, psi | 40,000 |
| Elongation, percent | 2 |
| Brinell hardness | 72 |
| Porosity, percent | 10-15 |
| Weight per cubic in., in pounds | 0.242 |
| Specific gravity | 6.7 |
| Coefficient of thermal expension per °F | $8.0 \times 10^{-6}$ |

TABLE II

PERMANENT FILTERS

| | | |
|---|---|---|
| Grade BF: | Porosity, percent | 10-30 |
| | Pore size, microns | 4-6 |
| | Equivalent screen mesh | −150 +325 |
| Grade BC: | Porosity, percent | 20-35 |
| | Pore size | 4-8 Microns |
| | Equivalent screen mesh | −80 +150 |

TABLE III

BEARING MATERIAL

| | |
|---|---|
| Tensile strength psi | 20,000 |
| Brinell hardness | −50 |
| Porosity, percent | 20-25 |
| Weight per cubic in. in pounds | 0.216 |
| Specific gravity | 6.0 |
| P. V. factor | 20,000 |
| Permanent deformation | 0.001 in. at 4,500 psi<br>0.002 in. at 7,600 psi<br>0.004 in. at 11,000 psi |
| Permissible stress at static load | 4,000 psi |

The cost of Oilite stainless powder parts compares favorably with bronze. The smaller the part the better the comparison in favor of stainless. Stainless parts have been specifically developed for those applications in which even the sturdiest bronze and other materials fail because of corrosion. Stainless will not replace other metals except when its particular characteristics are needed. However, stainless having joined the powder metal parade has considerably widened the powder field and this development promises new contributions to industry.

# WILLYS Simplifies Forging Inspection

Conveyerized magnetic-particle-inspection machine speeds inspection of forged parts. Unit checks 600 parts per man-hr v. 188 before. Inspection quality is raised. Fluorescent lines on parts positively identify flaws. Labor costs are cut 70 pct. Machine adjusts for different size parts.

By GEORGE H. FROMER
Chief Inspector, Forging Div.,
Willys-Overland Motors, Inc., Toledo

UNTIL recently, forgings produced by the Forging Div., Willys-Overland Motors, Inc., were inspected almost entirely by visual means and without the aid of magnetic devices except for occasional spot inspections. Inspectors averaged 1500 pieces a day. Unfortunately they were unable to detect many of the minute flaws and cracks that indicate defective forgings. Since ordinary magnetic inspection was slow, it was not applied on a production basis.

With the advent of a conveyerized Magnaglow machine made by Magnaflux Corp., it was found that an inspection rate of 600 pieces per man-hr could be attained. It was also found that 11 of the 15 forgings in regular production could be handled on one Magnaglow machine. This was made possible by equipping the conveyer with simple, inexpensive fixtures.

When such a unit was installed, it quickly showed a large labor saving and produced far better inspection results. Labor costs were cut 70 pct. Better inspection resulted because flaws not apparent in ordinary visual inspection are now clearly detected. This advantage alone made the machine a good investment since it weeded out defective forgings that might result in service failures or loss of life. Use of the machine is now mandatory on all forgings for steering systems.

In principle, the use of fluorescent magnetic particles is not new. What is new is the application of magnetic particle inspection in a continuous conveyerized setup. This setup rotates each forging 1½ turns while it is under so-called *black* or near-ultraviolet light. If a surface flaw exists, the magnetic particles collect in it and cause the flaw to stand out as a fluorescent line. The fluorescent indication is so prominent that it is sure to be seen by the inspector. He does not need to touch the forging to inspect it properly.

The machine occupies floor space of about 3x10 ft. It includes an endless conveyer that travels horizontally above a base tank. The tank contains a No. 15 oil in which the fine fluorescent magnetic particles are suspended. Motion is intermittent. The pauses offer time to load each piece. The conveyer is loaded at one end by an inspector who lays a forging on each fixture as it pauses. At the same time he visually inspects the forging for failure to fill out the die impression properly. He gages for size when necessary. The speed of the conveyer is variable. It is set at the approximate maximum that still allows the fixtures to be readily loaded.

Forgings are not clamped by the fixture. They merely lie upon it in appropriate notches, see Fig. 1. After leaving the loading station, each forging stops momentarily between a pair of fixed electromagnets that magnetize it in one direction, Fig. 2. They do not touch the forging.

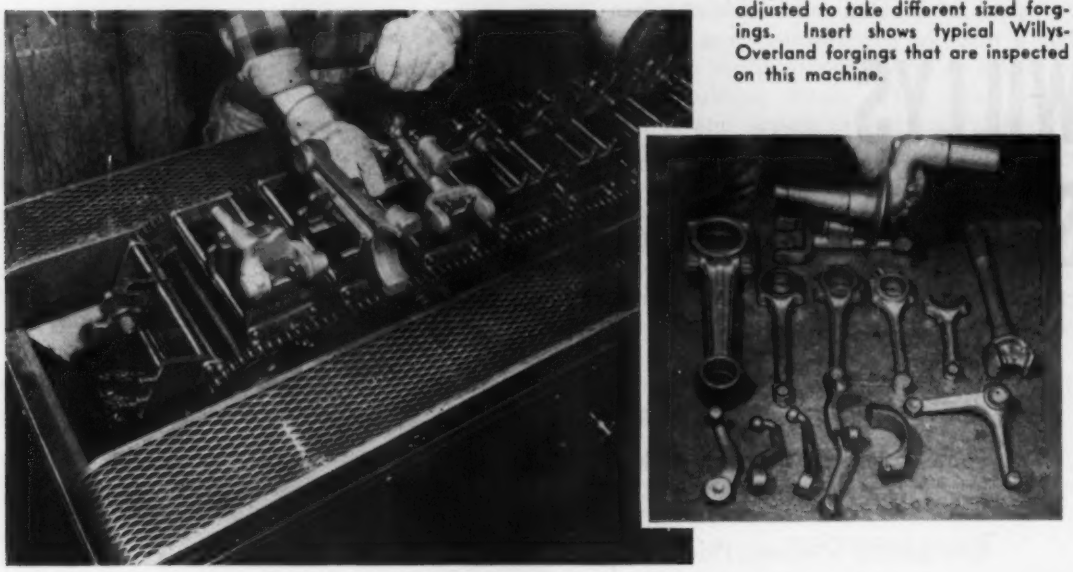

FIG. 1—Fixtures at loading end of Magnaglow machine can be readily adjusted to take different sized forgings. Insert shows typical Willys-Overland forgings that are inspected on this machine.

After this, the forging pauses under a curtain-like stream of the oil containing the fine magnetic particles. Excess oil drips back into the tank. At its next index, the part is gripped between two contacts, one of which is air-operated. These contacts pass current through the forging to magnetize it in a direction 90° to that of the field first applied, see Fig. 3. The next pause is under a second curtain of the fluid which again wets the entire surface.

After passing this curtain, the forging progresses through a curtained booth under a group of six *black* lights set to shine on all surfaces, see top, Fig. 4. During this transit, the forging is under the view of a second inspector. It is his duty to spot flaws revealed by the fluorescence generated by light on trapper particles. Near the end of the observation space, the forging is gripped at each end by a rubber pad. It is then raised from the conveyer and rotated 1½ turns during which any flaws on any surfaces are revealed. The arms carrying the pads then open automatically, drop the forging onto a table close to the inspector, and move back to pick up the next piece.

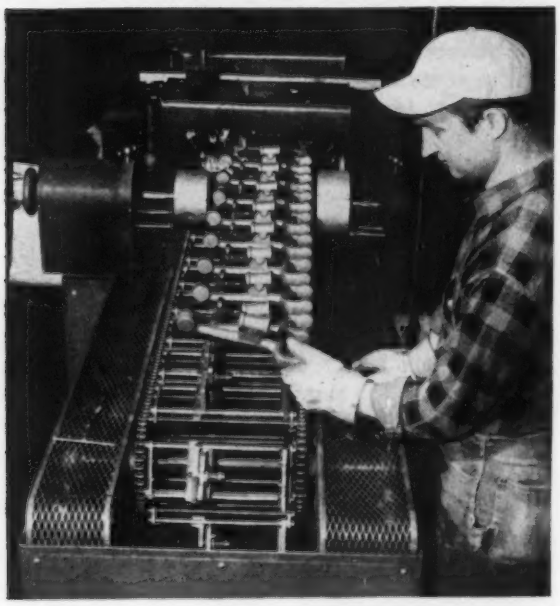

FIG. 2—Similar forgings mounted on conveyer pass first through a pair of magnets and then through the oil curtain containing magnetic fluorescent particles.

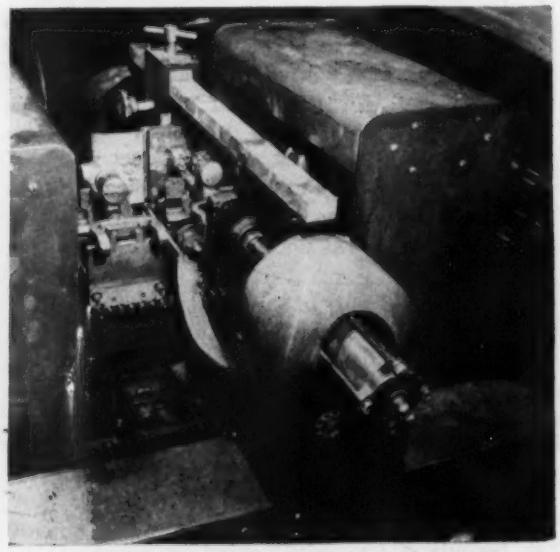

FIG. 3—Before being carried through the second oil stream, each forging is air-clamped between electrodes and remagnetized.

All these latter events happen under the *black* light and are followed by the eyes of the inspector. If he sees no flaw, he does nothing. The table automatically tilts to the right and the forging slides through a demagnetizing chute. It lands in a tote box or on an elevating con-

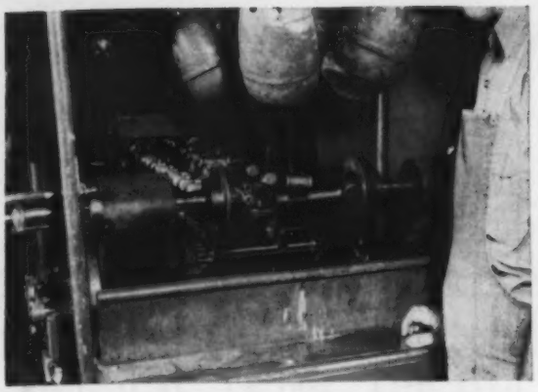

FIG. 4—At discharge end of machine, forgings are gripped by air-operated cylindrical rubber cushions and are rotated slowly 1½ times in the "black" light.

veyer that feeds the forging into a tote box.

If a flaw is seen, the inspector presses a foot switch. This tilts the table to the left and the piece falls into a reject box. Since it is still magnetized, the part can be reinspected easily to determine whether it can be salvaged or whether it must be scrapped.

As each fixture is unloaded, it returns on the conveyer below the advance level back to the loading point. Either inspector can stop the machine at any time by pressing a button near him. As motion is slow and intermittent, the safety factor is high. Only loading, inspection and acceptance depend upon the operators. All other functions are automatic. If, for any reason, the second set of magnetizing contacts is not made, a bell rings to warn the inspector.

Only slight manual labor is involved in handling the forgings. If inspectors become tired, they can exchange jobs.

When a new and differently shaped batch of forgings is to be loaded, the fixtures are changed by merely altering their angular position so that notches in supporting plates hold the forging in the desired position. Eleven different forgings are inspected with no fixture change. The four forgings not handled on the machine are so large they will not fit in the space available. Magnet positions, and those of the heads that rotate the forgings, are quickly adjustable to forgings of different lengths. For this reason it takes only a few minutes for a changeover.

Although conveyer speed can be set to inspect 1500 pieces an hr, 1200 is the highest rate attained to date. The conveyer can be stopped and the machine used without it if the piece is shifted through respective positions by hand. Loss of fluid remaining on parts is slight. It amounts to only 2 to 3 gal a month.

A hand Magnaglow unit is used for spot checks on those forgings for which new dies are being developed or those that are too large for machine inspection. In these cases, the part is dipped by hand, magnetized, and then inspected while being turned by hand. Such a machine is satisfactory for spot checks but is too slow for economical work on large batches.

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# NEW BOOKS

*"Manual of Open Die Forgings."* Methods, practices, specifications and inspection used in the manufacture of open-die ferrous forgings are described, and the existing terminology of the art is explained and clarified. A number of useful engineering tables are also included, and a discussion is presented on conditions which may be detrimental to service life. Open Die Forging Industry, 366 Madison Ave., New York 17. $3.00. 181 p.

* * *

*"Machinery's Handbook."* Fourteenth edition contains basic information, data and formulas for use in either designing or building any type of machine or other mechanical device. One of the outstanding features of the new edition is the Unified and American Standard Screw Thread System, designed to provide interchangeable screw threads in the United States, Canada and the United Kingdom. Other sections have been revised to include the latest current developments in machine design and construction. Industrial Press, 148 Lafayette St., New York 15. $7.00. 1911 p.

*"Cost Reduction in Materials Handling and Shipping."* The pamphlet is a collection of papers presented at the AMA Spring Packaging Conference, 1949. Among the subjects covered are handling factors to consider in container design, problems of the receiver in intra-plant shipments, savings with the disposable pallet, and packaging and packing for successful shipping. American Management Assn., 330 W. 42nd St., New York 18. $1.00. 50 p.

* * *

*"Electric Arc Welding—Procedure and Practice."* The manual presents a comprehensive discussion of all phases of electric arc welding to give a better understanding of the rudiments and changes in welding procedure that have taken place during its rapid growth. A section on special arc welding processes and applications is also provided to further the knowledge and training of the operator in advanced and specialized types of arc welding. Hobart Trade School, Box EW 146, Troy, Ohio. $3.00. 544 p.

# Simple Tool Cost Card System

A SIMPLIFIED tool cost card system enables tool buyers to determine what cutting tools give the lowest cost per piece machined. On one side of the card, shown at right, the number of pieces machined per tool grind are listed. Also, the amount removed per grind on a tool can be shown.

This information is used in two ways. The number of pieces removed per grind may be recorded for the usable portion of the cutting tool. The number of grinds possible is then accurately known. Thus, figures for amount of stock removed per grind are unnecessary.

The second method of using the information is to record the number of pieces per grind and amount of stock removed per grind for 10 regrinds. In this manner, the average number of pieces per grind and the average number of grinds possible per tool can be estimated.

The reverse side of the card, shown below, is used to record these data, as well as other information affecting tool cost, and figuring tool cost. After the necessary figures are filled in for items 1 through 8, figures for the remaining items, 9 through 12, are established by following the steps shown for each item. Item 12, *Tool Cost per Piece*, shows which tool is the most economical for a job. The card is made up from plain 5x8 in. file cards, and standard information can be printed or mimeographed on the card.

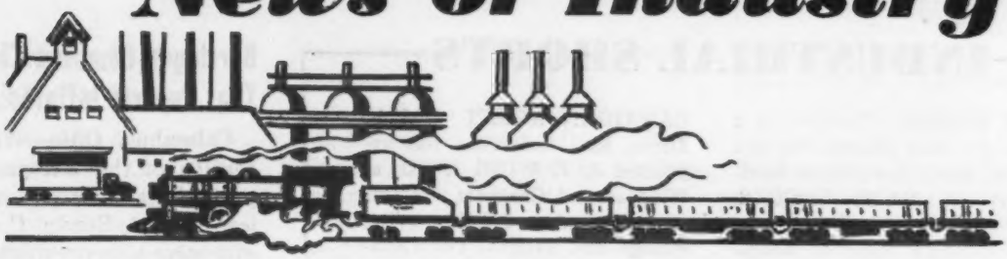
| TOOL NO. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Grind No. | Tool #1 | | Tool #2 | | Grind No. | Tool #1 | | Tool #2 | |
| | Stock /Grd. | Pcs. /Grd. | Stock /Grd. | Pcs. /Grd. | | Stock /Grd. | Pcs. /Grd. | Stock /Grd. | Pcs. /Grd. |
| 1 | | 187 | | 1455 | 36 | | | | 1426 |
| 2 | | 169 | | 1440 | 37 | | | | 1442 |
| 3 | | 120 | | 1435 | 38 | | | | 1428 |
| 4 | | 168 | | 1462 | 39 | | | | 1444 |
| 5 | | 172 | | 1442 | 40 | | | | 1435 |
| 6 | | 138 | | 1438 | 41 | | | | |
| 7 | | 157 | | 1448 | 42 | | | | |
| 8 | | 148 | | 1430 | 43 | | | | |
| 9 | | 187 | | 1438 | 44 | | | | |
| 10 | | 183 | | 1423 | 45 | | | | |
| 11 | | 168 | | 1451 | 46 | | | | |
| 12 | | 188 | | 1433 | 47 | | | | |
| 13 | | 180 | | 1444 | 48 | | | | |
| 14 | | 181 | | 1425 | 49 | | | | |
| 15 | | 175 | | 1442 | 50 | | | | |
| 16 | | 171 | | 1448 | 51 | | | | |
| 17 | | 181 | | 1436 | 52 | | | | |
| 18 | | 187 | | 1431 | 53 | | | | |
| 19 | | 169 | | 1443 | 54 | | | | |
| 20 | | 174 | | 1446 | 55 | | | | |
| 21 | | 186 | | 1449 | 56 | | | | |
| 22 | | 183 | | 1432 | 57 | | | | |
| 23 | | 170 | | 1452 | 58 | | | | |
| 24 | | 133 | | 1448 | 59 | | | | |
| 25 | | 170 | | 1426 | 60 | | | | |
| 26 | | 175 | | 1438 | 61 | | | | |
| 27 | | | | 1443 | 62 | | | | |
| 28 | | | | 1460 | 63 | | | | |
| 29 | | | | 1441 | 64 | | | | |
| 30 | | | | 1435 | 65 | | | | |
| 31 | | | | 1447 | 66 | | | | |
| 32 | | | | 1434 | 67 | | | | |
| 33 | | | | 1443 | 68 | | | | |
| 34 | | | | 1459 | 69 | | | | |
| 35 | | | | 1438 | 70 | | | | |
| TOTAL | | 4420 | | | | | | | 57,600 |
| AVG | | 170 | | | | | | | 1440 |

The sample card shows a comparison made between a special brazed-tip tool and standard Kennamatic tool, style TBR-16. While item 1 on the face of the card shows that the purchase price of the Kennamatic tool was greater, item 12 shows the Kennamatic tool reduced previous tool cost per piece by about 89 pct. This demonstrates that detailed cost records are logical in determining the relative merits of tools.

DATE TOOL Piston Turning Tool RECORD NO.
TOOL NUMBER "X" WORKPIECE Piston
PART NO. OPERATION Rough Turn
OPER. NO.

| ITEM | | #1 "X" | #2 TBR-16 | |
|---|---|---|---|---|
| 1 | Price of tool (purch. price in quantity desired) | $ 1.97 | $ 5.60 | |
| 2 | Avg. pieces/grind (see other side) | 170 | 1440 | (2 wiper edge 8 edges) |
| 3 | Minutes/grind (avg. or est.) | 7 | 7 | |
| 4 | Cost/grind | .20 | .20 | |
| 5 | Grinds/tool (actual or est.) | 26 | 40 | |
| 6 | Grinding cost/tool (Item 4 x Item 5) | 5.20 | 8.00 | |
| 7 | Minutes to change tools (actual or est.) | 5 | 2 | |
| 8 | Cost to change tools | .14 | .06 | |
| 9 | Changing cost/tool (Item 5 x Item 8) | 3.64 | 2.40 | |
| 10 | Pieces produced/tool (Item 2 x Item 5) | 4420 | 57600 | |
| 11 | Total tool cost (Item 1 + Item 6 + Item 9) | 10.81 | 16.00 | |
| 12 | TOOL COST/PIECE (Item 11 ÷ Item 10) | $.00244 | $.00027 | |

# News of Industry



## Truman's Veto—A Blow to Industry

**Freight absorption bill was less than desired . . . But would have been better than nothing . . . Pricing picture remains as badly muddled as ever**—*By Tom C. Campbell*

New York—President Truman's veto of the so-called basing point bill was a blow to industry. Despite all the talk about forthcoming clarification things are right back where they were when steel and cement companies went to the f.o.b. mill method of quoting prices—without freight absorption.

There were many who thought the basing point bill was much less than was desired. But lawyers and industrialists saw in it a chance to again reach the Supreme Court with a clear-cut issue — could freight be absorbed or couldn't it?

### Steel Was Ready

Steel companies were ready last week to begin absorption of freight had the law been passed. Even though it was not clear-cut, steel people felt that promises had been made to customers that if and when the law allowing freight absorption was passed steel firms would do so.

The freight absorption picture is still muddled. It is more confusing than ever. The FTC, according to past Supreme Court decisions, is supposed to be the authority for interpreting such laws as the Sherman Anti-trust Law, and the Robinson-Patman Act.

### Individual Basis Impossible

The FTC, which was bitterly opposed to the so-called basing point bill, has its own ideas on what constitutes competition.

Industrial lawyers say that the FTC majority holds that freight absorption is illegal unless it is on an individual basis without system or method. What constitutes an individual basis is the $64 question. There are too many customers and sales in steel to make each freight absorption an individual matter. Even if it were, lawyers point out that if a number of absorptions were handled in the same way it would naturally evolve into a system.

### New Battle Shaping Up

The FTC also holds, according to industrial lawyers, the opinion that if identical prices result the effect is the same as if there were collusion. So the FTC says there was collusion.

The fact that any schoolboy or any businessman knows that the man with the lowest price will bring his competitors down to his price cuts no ice with FTC.

FTC, it is believed, wants the f.o.b. system even though it will eventually mean monopoly price action within industrial areas. In the case of freight absorption the FTC apparently feels that competition should continue to the bitter end until one or more companies are thrown out of business. That this would result in wholesale bankruptcies, to be followed by monopolies on the part of those who are left, apparently produces no interest to the FTC.

It looks as if the whole basing point battle will be fought over again if the FTC decides to carry out its own interpretations—which it probably will.

## Ask FPC Pipeline Approval

**Washington** — The Public Service Co., Inc., has asked approval of the Federal Power Commission for construction of 365.5 miles of additional pipeline in North and South Carolina at an estimated overall cost of $7 million.

### Truman Vetoes Freight Absorption Bill

**Washington—President Truman last Friday vetoed S 1008—the so-called freight absorption or basing point bill.**

**In so doing, the President criticized the measure as failing to clarify the situation. Instead, he said, the "introduction of new and uncertain legal terminology" of the bill only confused it still more and might lead to "many years of complex litigation."**

**In support of his stand, the President cited the fact that Congressmen themselves were not agreed on what the bill meant, what it permitted and what it did not allow. Some even contended that it permitted resumption of the basing point system, he said.**

**Also, his veto message stated, approval of the bill with its conflicting interpretations might impair enforcement of the antitrust laws by casting doubts on previous court decisions as well as hinder the Federal Trade Commission in its prosecutions of price-fixing charges. The bill is regarded as an inadequate measure to fill a void.**

# INDUSTRIAL SHORTS

**BEST WISHES**—The first of a series of events planned for this year to mark the fiftieth anniversary of MACK TRUCKS, INC., will be held on June 22 at the company's plant in Allentown, Pa.

**LEASES PLANT**—The E. W. BLISS CO., Toledo, makers of rolling mill equipment and stamping presses, has leased the 117-acre $22 million U. S. Naval Ordnance plant in Canton, Ohio. The company's general and executive offices will be transferred from Toledo as soon as possible.

**MERGER**—Hapman Conveyors, Inc., Detroit and the C. H. Dutton Co., Kalamazoo, Mich., have merged to form the HAPMAN-DUTTON CO. The firm will be composed of the Hapman Conveyors Div. in Detroit and the Dutton Boiler Div. in Kalamazoo.

**GRANTS LICENSE** — LEBANON STEEL FOUNDRY, Lebanon, Pa., has effected licensing agreements with the Timken Roller Bearing Co., Canton, Ohio, to produce and sell Timken's patented heat-resistant super-alloy known as "16-25-6."

**ADDITION**—An additional office and yard has been opened in Omaha by the NORFOLK HIDE & METAL CO., Norfolk, Neb. The branch will operate as the Robinson Iron & Metal Co. at 1302 Webster St. Joseph F. Stern is in charge of the office.

**EXPEDITING SERVICE** — Charles Delmar Townsend has established the PROFESSIONAL EXPEDITING SERVICE at 1913 Lake Ave., Fort Wayne, Ind. The firm will expedite such projects as market surveys and plant layout. They also operate a clearing house for companies and individuals who need either manufacturing facilities or new products to produce.

**CANADIAN AGENT** — Tube Turns, Inc., Louisville, has appointed J. T. WING & CO. of Windsor and Chatham, Ontario as a distributor of their welding fittings and flanges. Ths Canadian company will also represent Tube Turns of Canada, Ltd.

**SALES OFFICE**—A sales office in Atlanta at 735 Spring St., N. W., has been opened by A. MILNE & CO. It will be under the direction of Harold F. Dicks.

**CHICAGO BRANCH** — A new sales and service branch located at South State and 16th Sts., Chicago, has been completed by FAIRBANKS, MORSE & CO. The new structure costing more than $500,000 includes a scale shop, diesel repair shop, warehouse and display floor.

**NEW TECHNIQUE** — A new formulating technique which eliminates the problem of "solvent wash" from baking finishes used on metal cabinets and similar metal articles has been developed by the Finishes Laboratories of STANDARD VARNISH WORKS, New York.

**MORE SPACE** — WHEELCO INSTRUMENTS CO., Chicago manufacturers of industrial, electronic control equipment, has acquired the lot adjoining their six story building. The new property will be used for a warehouse.

**REPRESENTATIVE** — The Hendey Machine o., Torrington, Conn., has discontinued their sales office in Detroit and ASSOCIATED MACHINERY SALES of Detroit and Clarkston, Mich., will represent them for the Michigan territory.

**EASTERN OUTLET** — Blackmer Pump Co., Grand Rapids, has appointed H. O. LINK CO. in Baltimore as a distributor of their entire product line and service parts.

## Barringer Counters Claim That Exports Inflated Scrap

**Columbus, Ohio**—With the exception of the war years, the export of steel scrap is at a 25-year low, stated Edwin C. Barringer, executive vice-president of the Institute of Scrap Iron & Steel, Inc., in response to Rep. Macy's call for the curtailment of scrap exports (THE IRON AGE, June 15, 1950, p. 117).

He also asserted that there is no shortage of scrap and that no steel production has been lost for lack of scrap.

### Control a Paradox

In addressing the Cincinnati and Northern Ohio chapters of the Institute, Mr. Barringer said that practically every ton of scrap exported from this country goes to Canada and Mexico, both traditionally dependent on the U. S. for part of their requirements.

With scrap exports amounting to only 1 pct of domestic consumption, he added, "It is a paradox that scrap for export is still under Government license while pig iron is on an unlimited basis."

Mr. Barringer pointed out that now, with scrap collection revived, stable market conditions are returning.

## Russia Ships No Manganese

**Washington**—Although monthly imports from Russia have averaged nearly $3.5 million so far in 1950, there have been no shipments of either manganese or chrome to this country, the Commerce Dept. trade report for April shows. Exports to Russia from the United States to the Soviet have dropped to $100,000 a month compared with $600,000 last year.

## Passes Half Century Mark

**Warren, Ohio** — Beaver Pipe Tools, Inc., celebrated the fiftieth anniversary of its founding here in June. The company is still housed in the building in which the first Packard automobile was built.

## Radioactive Tracers To Aid Pipeline Traffic Control

**Boise, Idaho** — Radioactive tracers, produced at Oak Ridge, Tenn., will be used by the Standard Oil Co. of California to facilitate traffic control in the 556-mile pipeline being laid from Salt Lake City to Pasco, Wash.

The pipeline will carry various products, such as gasoline, kerosene, and diesel fuel, in batches destined for different points. Since these batches follow each other with no break in flow, a way of knowing when to end or divert the flow was needed.

The method is to inject a small quantity of radioactive liquid into the stream at the pumping station whenever a new batch is introduced into the line. The flow then carries the tracer along with it and as soon as a Geiger counter at the control point starts clicking, valves are operated to direct the new product to its destination.

## May Construction Awards Remain on April's High Level

**New York** — May construction contract awards showed a dip of less than 1 pct from April's all-time record, according to the F. W. Dodge Corp. Awards totaled $1,347,603,000 for the 37 states east of the Rockies. Of this residential awards were $647,604,000, non-residential were $408,503,000, and public works and utility contracts were $264,456,000.

The total was 53 pct more than the May, 1949, figure and called for a 72 pct increase in floor space. The 5-month 1950 total was $5,508,685,000, 56 pct over the corresponding 1949 period.

## Inland's Randall Refuses To Answer Lobby Questionnaire

**Chicago**—Clarence B. Randall, president of the Inland Steel Co., Chicago, has refused to supply detailed information on company expenditures involving travel expense, subscriptions, contributions and advertising "dealing with public issues which might be the subject of Federal legislative action."

In reply to what he termed an inquisitorial letter from Rep. Buchanan (D., Pa.) asking for the information, Randall said last week that "unless our present doubts as to your authority to ask these questions are satisfactorily cleared, we shall make no further answer to your questionnaire."

Detailed expenditures over a 3½ year period were asked for by Rep. Buchanan, as chairman of a committee investigating activities influencing legislation. Inland was among 166 of the country's largest companies receiving the request.

# Business Booms, Purchasing Agents Agree

**NAPA's 35th convention draws over 3000 members . . . Frank exchange of information highlights meetings . . . Business, markets, prices get special attention**—*Staff Report.*

**Cleveland** — Boom! Business is good. There's no doubt of that. And there was no pussyfooting among the 3000 purchasing agents who gathered here last week to evaluate business trends, exchange vest-pocket notes and indulge in corridor gossip.

The occasion was the 35th International Convention of the National Assn. of Purchasing Agents. And they really laid it on the line —covering such vital subjects as business conditions, market supply, and price trends.

**Business Outlook**—Business is currently very good. In many lines it is far better than had been anticipated at the beginning of the year. The P.A.'s generally feel confident about the first half of the year. And they aren't shedding any tears over what they expect during the second half.

Answering a business survey, 76 pct of them forecast good business through the third quarter; 53 pct expect it to last through the end of the year. And they admit that their business survey is not given to long-term forecasting.

**Market Supply**—Some important materials, including steel and nonferrous metals, are in short supply. No early procurement relief is expected, especially in steel. Demand for these materials has exceeded expectations. It has been spurred on by the terrific and unexpected production pace in some

OFFICIALS' LINEUP: On the NAPA executive committee standing left to right are Sam H. Harper, The Pure Oil Co.; Chester F. Ogden, Detroit Edison Co.; Stanley E. Ringheim, Crown Zellerbach Corp.; O. L. Williamson, Merrill-Stevens Dry Dock & Repair Co.; Matt Shields, Gustin-Bacon Mfg. Co.; and J. Herbert Gaston, of City Purchasing Agent. Seated left to right are William R. Murray, Bigelow-Bigelow-Sanford Carpet Co., Inc.; Bruce D. Henderson, Westinghouse Electric Corp.; H. F. Jones, new president of NAPA, E. I. du Pont de Nemours & Co.; T. A. Corcoran, retiring president, Courier Journal and Louisville Times; and Harvey T. Sprang, Frankel Brothers Ltd.

durable and semi-durable consumer goods lines such as housing, autos, television and appliances.

**Price Trends**—Prices are going up on steel, nonferrous metals and lumber. Inflationary trends are on the prowl again. The P.A.'s expect more premium prices in steel. Many of them expect stainless and alloy prices to be increased. Some even expect a general boost in steel base prices, although one of their principal speakers, Admiral Ben Moreell, president, Jones & Laughlin Steel Corp., doesn't see anything now to "indicate a widespread price boost in the reasonable future."

**Inventories**—To be or not to be —to buy or not to buy. This is the crux of every P.A.'s bread and butter. It can mean the difference between profit and loss—success or failure to his firm. "Inventories are increasing slowly but steadily," reported H. A. Berry of Hotpoint, Inc. He thinks inventory accumulation can become a point of great danger if P.A.'s lose the feel of their markets and buy for inventory instead of for production and resale. But he thinks Midwest business looks good through 1950 with signs pointing to its continuance into 1951.

**Walking on Eggs**—The pipeline from mill scheduling to finished consumer article is 120 days long. Thus even a small crack in the production schedule for the ultimate buyer can bring quick grief to an unwary purchasing agent. If demand for refrigerators, farm implements and autos eases this summer, it could be felt on mill schedules by August.

**Competition** — In the past 2 months increasing competition has been reflected by real aggressive sales efforts. This is causing a profit squeeze in many lines, particularly at distribution levels and on fabricated goods, reported Robert Swanton, Winchester Repeating Arms Co., Div. of Olin Industries (He also heads the NAPA Business Survey Committee). Many P.A.'s believe this trend in merchandising finished goods to maintain volume must eventually reach back to put pressure on basic material prices, he said.

**Buying Policy**—Many firms were caught with short inventories when the production upswing started in March. Demand for materials which had been available on short notice has depleted stocks and increased production lead time. In the past 3 months buying policy has increased 30 days. The commitment policy of 93 pct of the P.A.'s is now 90 days. This is through *necessity* rather than *choice*.

**Word of Caution**—Dr. Edwin G. Nourse, former chairman of the Council of Economic Advisers, warned that the economy may now be in the first stages of a price inflation leading to a collapse. He declared that the government's deficit spending may produce an "accelerated price rise which might lead to a runaway boom. . . . This could be followed by a genuine depression."

**Two Virtues** — Purchasing Agents have at least two virtues—modesty and wisdom. They call steel the "keynote and bell wether of our economy." But when a steel executive wants to learn how his future business is going to be he tries to learn the composite business judgment of 10,000 P.A.'s. He knows that his sales depend on their judgment—that steel supplies industries they represent.

**Humorous Note**—They had some fun here, too. Admiral Ben Moreell brought the house down when he gravely opened his speech thus: "3000 purchasing agents! I haven't seen so much concentrated trouble since the invasion of Okinawa." Then he launched an attack on welfare schemes and subsidies. "Americans want liberty," he declared, "And are willing and able to pay the price for it."

## CED Committee's New Report Sees Real Wages Doubled by 1980

**New York**—By 1980 the American worker will be able to buy twice as much with an hour's work if industrial progress continues at the same rate averaged over the last 50 years, claims the Research and Policy Committee of the Committee for Economic Development.

The statement is made by the committee in its newly-published statement on national policy, "How to Raise Real Wages." How to raise "real wages," or what money wages can buy, is the crux of the problem of lifting the standard of living, says the Committee.

To achieve a goal of doubling real wages in three decades, output per manhour must be raised, employment stabilized, and job opportunities be steadily provided for the ever-increasing labor force, notes the CED group.

"Do I know what a *jig* is?—Get a load of this!"

## Record-Size Bliss Power Press Handbook Has 700 Pages

**New York**—Ten times the size of the former vest pocket handbook, the 700 page E. W. Bliss Co. Power Press Handbook just published is reportedly the most complete handbook produced exclusively for the pressed metalworking industry.

It includes liberally illustrated

sections on primary sheet metalworking operations, types of equipment used to perform the operations, information tables, methods of computing press capacity and blank size for many types of work, how to select a proper press for a given job and probably the most comprehensive glossary of industry terms ever compiled.

A special 400 page section is devoted to operating and maintenance instructions and parts lists for a wide variety of Bliss equipment. The book sells for $7.50 and may be obtained from the E. W. Bliss Co. Handbook Dept., Toledo 7, Ohio.

## RFC Loans Approved

**Washington**—Reconstruction Finance Corp. loans approved during April included: Associated Investment Homes, Inc., Quincy, Mass., $3,750,000; Home Investment Co., Long Beach, $1,046,000; Bride Bldg. Co., Detroit, $556,000; and Cook Construction Co., Jackson, Miss., $500,000.

## Wants Pipe Changes Made

**Washington** — The Kansas-Nebraska Natural Gas Co. has asked the Federal Power Commission for permission to replace about 60 miles of existing pipeline with larger sizes and to install an additional 1640 hp in compressor capacity.

## British Steelworker Earns Less

**New York**—British steelworkers' average weekly wages recently have averaged $21.70 in U. S. money, or a shade less than one-third of average wages paid to workers in the domestic iron and steel industry, reports the American Iron and Steel Institute.

## Reid Passes Half Century

**Beverly, Mass**—The Reid Bros. Co., Inc., machine tool manufacturers, marked the fiftieth anniversary of its founding by Robert and Andrew S. Reid in 1900. The company has grown until it now occupies a modern factory in this city.

# Producers, Users Divided on Copper Tariff

**Tariff question is crux of tremendous battle . . . Consumers seen to have lost . . . Copper expected to rise after tariff suspension ends . . . Production inadequate**—*By John Anthony.*

**New York**—To tax or not to tax imported copper at the rate of 2¢ per lb is the question around which a tremendous battle is being waged by domestic producers of copper versus independent copper fabricators and their customers. Foreign producers who have domestic mining interests are neutral.

But the battle has already been virtually lost by the consumers. At present the 2¢ copper tariff is under suspension by act of Congress. Suspension ends on June 30.

### Immediate Rise

Measures to extend the tariff suspension have bogged down in committee. They will be pigeonholed in the rush of high priority measures before adjournment. The industry has already discounted timely action by Congress, and producers are selling foreign copper for July delivery with duty for the account of the buyer.

The net effect will be an advance of 2¢ per lb in the entire domestic copper market effective July 1, followed by comparable rises in brass and wire mill products, ingot brass and bronze, anode prices, etc. At 22½¢ per lb, copper is now selling only 1¢ per lb below the postwar peak price of 1948-1949.

### Shortage Met

Domestic copper production is inadequate to meet the demands of U. S. industry during any period of high level operations. Copper imports (excluding scrap) during the first 3 months of the year averaged 52,471 net tons a month. Domestic mine production of copper during that period averaged 74,182 tons a month.

One of the brass mills has calculated from the actual consumption by fabricators and stockpiling that there has been a shortage of 32,416 tons a month over a 28-month period to the end of April. This shortage was met by imported foreign copper.

The approaching end of tariff suspension with sustained high demand has already been responsible for at least 3¢ of recent price advances. Buyers have for months been getting in their orders for

LOOK, NO LUNGS: A robot head simulates human breathing to test efficiency of respirators designed to protect industrial workers from dust and fumes. The head is used at the newly-dedicated John T. Ryan Memorial Laboratory, Pittsburgh, which is said to be the largest lab developing safety equipment for miners and industrial workers. It is sponsored by the Mines Safety Appliances Co.

copper and fabricated products to be safe against a possible tariff price rise. Business has been good and they could afford to do so without fear of loss.

### Dealers Hold Back

Recovery of copper from scrap is only a small proportion of domestic refinery production. But when scrap dealers sense a coming price advance in a metal, they would much rather hold on to their stocks—a potent factor in raising the price.

In the first 4 months this year, scrap recovery was producing 10,000 to 12,000 tons of copper a month. In May, this figure dropped to 6500 tons. June can be expected to be lower.

Refineries, hard-pressed for scrap copper, have inched up their scrap buying prices in the last few months. This development was bound to raise the copper market.

### Stocks Lowered

Although part of the recent heavy demand for copper and copper products can be attributed to anticipation of the tariff rise, now that the time is approaching, buying psychology remains unchanged. The demand for copper is beyond the capacity of producers.

By the end of May refined stocks in the U. S. had been pushed down to 51,020 tons, less than 2 weeks' requirements. Deliveries to fabricators in May, reported by the Copper Institute, were 113,837 tons, not far from a record.

Refined copper production in the U. S. in May was 112,388 tons, to which domestic mine production contributed 76,543 tons.

## Steel Employment Rises

**New York**—Averaging 621,100 in April, employment in the iron and steel industry was the bighest since June 1949, according to the American Iron and Steel Institute. The increase, practically all in wage earners, was 5500 over March. Also up, wages averaged $1.707 an hour for a 38.5-hour week. The industry payroll totaled $186,185,000 in April, estimates the AISI.

## NAED Speaker Predicts High Electrical Sales Level in 1950

**Atlantic City** — Although first quarter sales were not as strong as had been expected, second quarter sales showed a spurt and indications now point to completion of the year on a high sales level, said D. M. Salsbury, Westinghouse Electric Supply Co. chief and retiring president of the National Assn. of Electrical Distributors.

He spoke at the forty-second annual convention of the NAED in Convention Hall here before an assembly of 2500. Reasons for his forecast of good sales were continuing high employment and income for both farmers and workers, accelerating home building, and industrial construction and improvement.

### Cites Sales Forecasts

Noting that consumer spending for appliances continues to increase, Mr. Salsbury said that one electrical manufacturer predicted that its sales would top last year's.

### STEEL PRODUCTION (Ingots and Steel for Castings)

As Reported to American Iron & Steel Institute

| Period | OPEN HEARTH | | BESSEMER | | ELECTRIC | | TOTAL | | Calculated Weekly Production (Net Tons) | Number of Weeks in Month |
|---|---|---|---|---|---|---|---|---|---|---|
| | Net Tons | Percent of Capacity | Net Tons | Percent of Capacity | Net Tons | Percent of Capacity | Net Tons | Percent of Capacity | | |
| January, 1950 | 7,131,519 | 96.5 | 379,252 | 80.6 | 419,601 | 71.9 | 7,930,372 | 93.9 | 1,790,152 | 4.43 |
| February | 6,142,178 | 92.0 | 255,565 | 60.2 | 395,502 | 75.0 | 6,793,245 | 89.1 | 1,698,311 | 4.00 |
| March | 6,747,680 | 91.3 | 265,726 | 56.5 | 473,630 | 81.1 | 7,487,036 | 88.7 | 1,690,076 | 4.43 |
| 1st Quarter | 20,021,377 | 93.3 | 900,543 | 65.9 | 1,288,733 | 76.0 | 22,210,653 | 90.6 | 1,727,111 | 12.86 |
| *April | 7,314,733 | 102.2 | 407,909 | 89.5 | 490,030 | 86.7 | 8,212,672 | 100.4 | 1,914,376 | 4.29 |
| †May | 7,595,052 | 102.8 | 437,006 | 92.9 | 516,980 | 88.6 | 8,549,038 | 101.2 | 1,929,805 | 4.43 |
| June | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 4.29 |

Note—The percentages of capacity operated are calculated on weekly capacities of 1,668,287 net tons open hearth, 106,195 net tons Bessemer and 131,786 net tons electric ingots and steel for castings, total 1,906,268 net tons; based on annual capacities as of January 1, 1950 as follows: Open hearth 86,884,490 net tons, Bessemer 5,537,000 net tons, Electric 6,871,310 net tons, total 99,392,800 net tons.
* Revised.
† Preliminary figures, subject to revision.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| January, 1949 | 7,289,865 | 101.2 | 408,552 | 92.6 | 498,973 | 96.1 | 8,197,390 | 100.4 | 1,850,427 | 4.43 |
| February | 6,635,765 | 102.0 | 379,698 | 95.3 | 478,479 | 102.0 | 7,493,942 | 101.6 | 1,873,485 | 4.00 |
| March | 7,476,139 | 103.7 | 430,176 | 97.5 | 495,481 | 95.4 | 8,401,796 | 102.9 | 1,896,568 | 4.43 |
| 1st Quarter | 21,401,769 | 102.3 | 1,218,426 | 95.2 | 1,472,933 | 97.7 | 24,093,128 | 101.6 | 1,873,494 | 12.86 |
| April | 7,017,712 | 100.6 | 404,095 | 94.6 | 374,358 | 74.4 | 7,796,165 | 98.6 | 1,817,288 | 4.29 |
| May | 6,891,293 | 95.6 | 400,741 | 90.9 | 306,956 | 59.1 | 7,598,990 | 93.0 | 1,715,348 | 4.43 |
| June | 5,956,402 | 85.4 | 349,196 | 81.8 | 199,058 | 39.6 | 6,504,656 | 82.2 | 1,516,237 | 4.29 |
| 2nd Quarter | 19,865,407 | 93.9 | 1,154,032 | 89.1 | 880,372 | 57.7 | 21,899,811 | 91.3 | 1,683,306 | 13.01 |
| 1st 6 months | 41,267,176 | 98.1 | 2,372,458 | 92.1 | 2,353,305 | 77.6 | 45,992,939 | 96.4 | 1,777,848 | 25.87 |
| July | 5,309,060 | 73.6 | 300,236 | 68.2 | 175,535 | 33.9 | 5,784,831 | 71.0 | 1,308,785 | 4.42 |
| August | 6,103,326 | 84.7 | 355,335 | 80.6 | 264,110 | 50.9 | 6,722,771 | 82.3 | 1,517,556 | 4.43 |
| September | 5,994,100 | 86.1 | 350,282 | 82.2 | 253,553 | 50.5 | 6,597,935 | 83.6 | 1,541,574 | 4.28 |
| 3rd Quarter | 17,406,486 | 81.5 | 1,005,853 | 76.9 | 693,198 | 45.0 | 19,105,537 | 78.9 | 1,455,106 | 13.13 |
| 9 months | 58,673,662 | 92.5 | 3,378,311 | 87.0 | 3,046,503 | 66.6 | 65,098,476 | 90.5 | 1,669,192 | 39.00 |
| October | 814,618 | 11.3 | ..... | ..... | 113,729 | 21.9 | 928,347 | 11.4 | 209,559 | 4.43 |
| November | 3,806,870 | 54.6 | 172,270 | 40.3 | 243,989 | 48.5 | 4,223,129 | 53.4 | 984,412 | 4.29 |
| December | 6,953,653 | 96.7 | 396,075 | 90.0 | 378,496 | 73.0 | 7,728,224 | 94.8 | 1,748,467 | 4.42 |
| 4th Quarter | 11,575,141 | 54.2 | 568,345 | 43.4 | 736,214 | 47.8 | 12,879,700 | 53.2 | 980,190 | 13.14 |
| 2nd 6 months | 28,981,627 | 67.8 | 1,574,198 | 60.2 | 1,429,412 | 46.4 | 31,985,237 | 66.0 | 1,217,558 | 26.27 |
| Total | 70,248,803 | 82.8 | 3,946,656 | 76.0 | 3,782,717 | 61.9 | 77,978,176 | 81.1 | 1,495,554 | 52.14 |

Note—The percentages of capacity operated are calculated on weekly capacities of 1,626,717 net tons open hearth, 99,559 net tons Bessemer and 117,240 net tons electric ingots and steel for castings, total 1,843,516 net tons; based on annual capacities as of January 1, 1949 as follows: Open hearth 84,817,040 net tons, Bessemer 5,191,000 net tons, Electric 6,112,890 net tons, total 96,120,930 net tons.
* Revised January through December, 1949.

He also pointed out that the trade expects 6 million video sets at a total of $2 billion to be sold in '50.

Elected president at the session was W. G. Peirce, Jr., head of Peirce-Phelps, Inc., Philadelphia. Other officers are: R. M. Johannesen, Johannesen Electric Co., Greensboro, N. C., vice-president and chairman apparatus and supply division; Benjamin Gross, Gross Distributors, N. Y., vice-president and chairman appliance division; Ralph J. Brown, vice-president of General Electric Supply Corp., Bridgeport, Conn., member executive committee; and I. W. Danforth, president of Danforth Co., Pittsburgh, executive committee.

# National Steel Plans Capacity Expansion

**Announces $25 to $30 million program to add ½ million tons to annual ingot capacity . . . Plan includes new blast furnace and openhearth changes . . . Jan. 1952 completion scheduled.**

**Pittsburgh**—A $25 to $30 million expansion program that will add 500,000 tons to the annual ingot capacity of National Steel Corp. was announced this week by Ernest T. Weir, chairman of the company.

### Points of Program

The program will include a new blast furnace, additional coking capacity and the rebuilding and enlargement of an openhearth furnace at Great Lakes Steel Corp., and the rebuilding and enlargement of openhearth furnaces at Weirton Steel Co.

The new blast furnace at Great Lakes will add 40,000 tons per month to the existing pig iron capacity of this subsidiary, which now has three furnaces of approximately similar size on Zug Island in the Detroit River near Detroit. To provide additional fuel requirements, the coke plant on Zug Island will also be expanded.

### To Enlarge Furnaces

Steel production at the Ecorse, Mich., plant of the Great Lakes Steel Corp. will be increased substantially when the output of pig iron from the new furnace becomes available, said Mr. Weir. Enlargement of an openhearth furnace at the Ecorse plant to a capacity of 500 tons per heat will provide a further production increase. Completion date for the new blast furnace is scheduled for Jan. 1, 1952. Construction will open in the near future.

### Fifth Largest

With the additional ingot capacity, National's annual output will be increased to 5 million tons.

As the fifth largest steel firm in the United States, National Steel produces 4,500,000 tons each year, stated Mr. Weir.

## Bureau Charges Many Mines Have Poor Coal Dust Controls

**Washington** — Righteous indignation motivated a Bureau of Mines report which charged that despite repeated emphasis by the Bureau, "many mines continue to operate without any effective means of allaying coal dust at its source."

Basis of the charge was a survey of 883 coal mines where conditions warranted adequate dust-allaying measures. Only 316, or about 36 pct, had adequate control of dust, said the Bureau. It noted that 520 mines had no dust-allaying system at all and the remaining 47 mines had methods considered unsatisfactory.

## Steelmen Named Chevaliers

**New York**—New Chevaliers in the Order of the Couronne de Chene are N. Schilling and A. Bohler, vice-president and treasurer of Amerlux Steel Products Corp., respectively. The medals, awarded for "valuable services" rendered to Luxembourg, were conferred by B. N. Zimmer, Luxembourg's Consul General here.

## April Finished Steel Shipments

As Reported to the American Iron & Steel Institute

| STEEL PRODUCTS | | April | | | | | To Date This Year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Carbon | Alloy | Stainless | Total | Per cent of Total Steel Shipments | Carbon | Alloy | Stainless | Total | Per cent of Total Steel Shipments |
| Ingots | 1A | 54,526 | 10,064 | 1,398 | 65,988 | 1.1 | 176,349 | 36,190 | 5,500 | 218,039 | 1.0 |
| Blooms, slabs, billets, tube rounds, sheet bars, etc. | 1B | 125,699 | 32,835 | 840 | 159,334 | 2.7 | 555,713 | 128,184 | 2,961 | 686,858 | 3.1 |
| Skelp | 2 | 7,305 | - | - | 7,305 | 0.1 | 30,419 | - | - | 30,419 | 0.2 |
| Wire rods | 3 | 64,233 | 974 | 85 | 65,292 | 1.1 | 863,306 | 5,126 | 396 | 868,828 | 1.6 |
| Structural shapes (heavy) | 4 | 330,471 | 2,734 | 9 | 333,214 | 5.8 | 1,286,097 | 12,226 | 85 | 1,298,408 | 5.9 |
| Steel piling | 5 | 26,834 | - | - | 26,834 | 0.5 | 85,684 | - | - | 85,684 | 0.4 |
| Plates | 6 | 424,433 | 12,788 | 925 | 438,146 | 7.6 | 1,634,417 | 43,397 | 3,436 | 1,681,350 | 7.6 |
| Rails—Standard (over 60 lbs.) | 7 | 154,707 | - | - | 154,707 | 2.7 | 528,797 | 8 | - | 528,805 | 2.4 |
| Rails—All other | 8 | 9,333 | 19 | - | 9,352 | 0.2 | 35,622 | 89 | - | 35,711 | 0.2 |
| Joint bars | 9 | 9,949 | - | - | 9,949 | 0.2 | 35,328 | - | - | 35,328 | 0.2 |
| Tie plates | 10 | 40,398 | - | - | 40,398 | 0.7 | 133,136 | - | - | 133,136 | 0.6 |
| Track spikes | 11 | 12,464 | - | - | 12,464 | 0.2 | 41,500 | - | - | 41,500 | 0.2 |
| Wheels (rolled & forged) | 12 | 21,935 | 20 | - | 21,955 | 0.4 | 74,733 | 43 | - | 74,776 | 0.3 |
| Axles | 13 | 10,170 | 29 | - | 10,199 | 0.2 | 25,685 | 250 | - | 25,935 | 0.1 |
| Bars—Hot rolled (incl. light shapes) | 14 | 489,347 | 154,451 | 1,901 | 645,699 | 11.2 | 1,893,133 | 617,028 | 8,316 | 2,518,477 | 11.4 |
| Bars—Reinforcing | 15 | 121,858 | - | - | 121,858 | 2.1 | * 458,315 | - | - | * 458,315 | 2.1 |
| Bars—Cold finished | 16 | 107,328 | 20,800 | 2,065 | 130,187 | 2.2 | * 403,883 | * 76,213 | 7,692 | * 487,788 | 2.2 |
| Bars—Tool Steel | 17 | 1,101 | 4,836 | - | 5,937 | 0.1 | 4,750 | 20,024 | - | 24,774 | 0.1 |
| Standard pipe | 18 | 218,783 | - | 1 | 218,784 | 3.8 | 789,296 | - | 4 | 789,300 | 3.6 |
| Oil country goods | 19 | 118,594 | 18,970 | - | 137,464 | 2.4 | 456,892 | 67,535 | - | 524,427 | 2.4 |
| Line pipe | 20 | 310,153 | - | - | 310,153 | 5.4 | 1,102,241 | - | - | 1,102,241 | 5.0 |
| Mechanical tubing | 21 | 32,169 | 17,210 | 879 | 49,658 | 0.8 | 140,619 | 60,818 | 919 | 202,356 | 0.9 |
| Pressure tubing | 22 | 24,256 | 1,770 | 537 | 26,563 | 0.5 | 75,212 | 8,536 | 2,216 | 85,964 | 0.4 |
| Wire—Drawn | 23 | 216,813 | 3,011 | 1,532 | 221,356 | 3.8 | 897,535 | * 11,828 | 6,390 | * 915,713 | 4.1 |
| Wire—Nails & staples | 24 | 70,309 | - | - | 70,309 | 1.2 | 289,230 | - | 33 | 289,263 | 1.3 |
| Wire—Barbed & twisted | 25 | 21,579 | - | - | 21,579 | 0.4 | 76,678 | - | - | 76,678 | 0.3 |
| Wire—Woven wire fence | 26 | 45,011 | - | - | 45,011 | 0.8 | 158,414 | - | - | 158,414 | 0.7 |
| Wire—Bale ties | 27 | 5,075 | - | - | 5,075 | 0.1 | 15,365 | - | - | 15,365 | 0.1 |
| Black plate | 28 | 37,643 | - | - | 37,643 | 0.6 | 155,942 | - | - | 155,942 | 0.7 |
| Tin & terne plate—hot dipped | 29 | 136,596 | - | - | 136,596 | 2.4 | 563,010 | - | - | 563,010 | 2.5 |
| Tin plate—Electrolytic | 30 | 289,840 | - | - | 289,840 | 4.0 | 841,271 | - | - | 841,271 | 3.8 |
| Sheets—Hot rolled | 31 | 631,658 | 15,703 | 2,425 | 652,786 | 11.3 | *2,361,834 | 69,979 | 8,774 | *2,440,587 | 11.0 |
| Sheets—Cold rolled | 32 | 733,182 | 6,104 | 7,786 | 747,072 | 12.9 | 2,853,730 | 27,199 | 31,980 | 2,912,909 | 13.2 |
| Sheets—Galvanized | 33 | 186,367 | 3,118 | - | 189,485 | 3.3 | 756,954 | 9,371 | - | 766,325 | 3.5 |
| Sheets—All other coated | 34 | 19,338 | - | - | 19,338 | 0.3 | 71,641 | - | - | 71,641 | 0.3 |
| Sheets—Enameling | 35 | 22,567 | - | - | 22,567 | 0.4 | * 78,747 | - | - | * 78,747 | 0.4 |
| Electrical sheets & strip | 36 | 6,969 | 48,216 | - | 55,185 | 0.9 | 28,258 | 181,208 | - | 209,466 | 0.9 |
| Strip—Hot rolled | 37 | 174,904 | 3,985 | 886 | 178,775 | 3.1 | 686,930 | 14,775 | 2,908 | 704,607 | 3.2 |
| Strip—Cold rolled | 38 | 131,987 | 932 | 13,897 | 146,816 | 2.5 | 522,668 | 1,715 | 53,145 | 578,262 | 2.6 |
| TOTAL | -- | 5,386,138 | 360,209 | 34,106 | 5,780,453 | 100.0 | 20,590,724 | 1,393,882 | 134,713 | 22,119,319 | 100.0 |

During 1949 the companies included above represented 99.4 % of the total output of finished rolled steel products as reported to the American Iron and Steel Institute.

* Revised.

*Viewing the News from*

## The ECONOMIC SIDE

By JOSEPH STAGG LAWRENCE

### *Isolationism*

WITHIN the large areas of American opinion which consider themselves enlightened, an isolationist is an unsavory character. He is usually a fellow who does not wish to involve his country in alien quarrels unless he is very certain that American interests are substantially involved. He believes that our neighbors should solve their problems with a minimum of advice and aid from this country. That this aid should be limited by American capacity and by clear evidence regarding the benefits to us that may be expected.

Being a fellow who always asks what an article costs before he buys, who looks before he leaps, he is not a character who lends himself readily to noble enterprise. He suffers from a geographical as well as a social taint. Commonly found west of the Mississippi, he is apt to be a Republican and well-to-do. He may even think that Colonel McCormick and William Randolph Hearst are occasionally right. That Herbert Hoover was a pretty fair president.

Imagine the consternation of these drooling liberals when the Executive Committee of the British Labor party announced that it would have nothing to do with the French plan for integrating the steel and coal industries of Western Europe; that the Socialist dogma of the Labor party must take precedence over the unity and strength of the western nations; that it would have no traffic with any scheme that might promote private enterprise. Here is a type of isolationist reasoning which is found, allegedly, only among the die-hards of the Union League Club.

The blunt statement of the Labor party Executive Committee was deplored with characteristic disappointment by the Editor of *The New York Times* as "a hard blow to the hopes and plans for European unity."

These editorial tears are premature and unmerited. The Schuman plan for the economic integration of Western Europe is one of the most constructive and hopeful proposals of the postwar world. Entirely aside from the distinct economic advantages of greater efficiency, lower costs and improved competitive vigor in world markets which the plan offers, it suggests an end to the age old antagonism between the French and the German that dates back to the dissolution of Charlemagne's empire. The fact that the proposal emanates from the French is particularly significant and provides an impressive augury of possible success. It holds forth the hope of unity in the face of an aggressor who had probably hoped to deal with Western Europe on a piece-meal basis.

The high priests of the Labor party know that the inefficiency and high costs of state enterprise cannot tolerate an open market. That membership in a Western European economic union would entail British adjustments and sacrifices that might jeopardize the power of the Labor party and undermine some of the most cherished fantasies of the Socialist planner.

The tactics of Bevin and Atlee had already raised serious questions on the Continent regarding their good faith. It was feared, with what now appears to be considerable justice, that the British were preparing to sabotage the Schuman plan. The statement of the Labor party Executive Committee has the merit of complete candor. The plan can now be explored by those sincerely interested in it without fear that it will be torpedoed by one of the parties.

## Steps in Steel's Progress Outlined in Institute Report

**New York**—Significant technological developments contributing to the steel industry's march of progress in the last three decades were listed in a report from the American Iron and Steel Institute recently.

They are: high speed continuous sheet and strip mills; stainless steels; industry electrification; low alloy, high tensile steels; electrolytic tin plate; blast furnace turbo blowers; the byproduct coke oven process; furnace size increases; grain size and hardenability controls.

Also continuous galvanizing; electric weld and continuous butt weld pipe; slag control; automatic controls; spectrograph; growth of alloy and electric furnace steels; and expansion of industrial capacity.

### Continuous Mills

Demands of other industries resulted in such products as cold rolled sheets and superior tin plate, said the Institute. Nearly $900 million has been invested in continuous mills in 25 years and several times the original amount would be needed to replace them.

The manufacture of tin plate has been revolutionized by continuous rolling and electrolytic plating. Another major step forward was the advent of the cold reducing mill. Heat treatment of cold rolled strip has made this country a producer of razor blade and flat spring steel. Prior to World War II, America was largely dependent on foreign mills for razor blade steel.

## Want 80 Trackless Trollies

**Detroit** — The Detroit Street Railways Comm. has authorized the purchase of 80 silent electric trolley coaches to replace buses on the Grand River route, a main thoroughfare. A $3 million bond issue for the necessary wiring and the coaches has been approved by the city. Bids for the coaches will soon be requested.

# Stainless Steel Demand Up, Inventories Dip

**Demand seen at postwar and all-time highs . . . Some sight shortage in offing . . . No letup expected . . . Mill customers unable to wait, reach into warehouses**—*By Gene Beaudet.*

Chicago—While the shortage of flat-rolled carbon steel products has been getting the lion's share of attention in the Chicago area, the steadily rising demand for stainless steel products in the last 2 or 3 months has gone almost unnoticed.

### Demand Soars

During the last 90 days sales and mill order backlogs have increased and inventories have diminished. Some feel the demand for flat-rolled stainless is higher than at any time since the war, while others claim the demand for stainless strip is at an all-time high. It has reached the point where some quarters think there will be a critical shortage of flat-rolled stainless in 30 days if orders keep coming in at the same rate.

One stainless producer in the area which quoted deliveries of about 3 weeks last March is now promising deliveries not under 8 to 10 weeks. Other producers which ship into the area are reported to have even longer backlogs.

### No Letup Seen

One is reported offering 12 to 14 weeks delivery on sheets, 8 to 10 weeks on bars and 4 to 6 weeks on plates. Another is promising delivery of 24-in. and under narrow strip in October and November.

Sales have been running an estimated 20 to 25 pct higher in the last 90 days. No one sees any letup for the rest of the year. Some mills are putting their warehouse customers on allocation, a not too common occurrence in the stainless field. One mill which allots 25 pct of its production to warehouses claims its warehouse outlets would take all the flat-rolled stainless they produce, if they could get it.

Warehouses are sharing in the general demand. Mill customers unable to wait for extended mill deliveries are turning to warehouses for their stainless. One warehouse executive reports sales of bars have increased 30 pct and sheets and strip 35 pct in the last 3 months.

The high demand for flat-rolled is making it difficult for them to maintain a balanced inventory. Another warehouse reports hardly any inventory of 14 and 16 gage, 42 to 48-in. width sheet.

In general, warehouse and mill prices don't differ in quantities up to 10,000 lb. Above that figure mill prices run about $2.00 per ton lower. However, some sources that used to place 5000 and 10,000 lb orders are now asking warehouses for 40,000 lb rather than wait for mill deliveries.

### Where's It Going?

A few warehouses are absorbing freight to get stainless but the comfortable profit margin on it enables them to do this without affecting consumer prices. No premium or gray market prices are being paid.

Many people, taken by surprise by the sudden bulge in stainless sales, are wondering where it is going. Demand for stainless by manufacturers of television cones is now beginning to make itself felt. The promising use of stain-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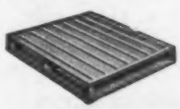

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less in curtain wall construction and trim on buildings has not yet reached the stage where it can be considered a big factor in the demand for stainless.

**Deluxe Appliances**

A lot of it is going into home appliances. Appliance manufacturers have found consumers are buying the deluxe type of appliances. One manufacturer of washing machines found that the medium and low priced washers were being passed up in preference for the high priced ones, which require more stainless. The same goes for refrigerators, dishwashers and even stainless coffee pots.

The automotive industry is placing considerable orders for stainless bars. Manufacturers of new machinery, currently enjoying a good volume of business, are requiring more stainless bars for machine parts.

## STEEL CONSTRUCTION NEWS

**Fabricated steel awards this week includetd the following:**

4240 **Tons,** Wilton, N. D., transmission towers, spec. 2995, Bureau of Reclamation, to American Bridge Co.

3700 **Tons,** series of bridges between Kansas City and Chicago, by Chicago, Burlington and Quincy. To American Bridge Co.

1700 **Tons,** Gloucester, Camden, Burlington Counties, N. J., New Jersey Turnpike Authority, contract 33, F. A. Canuso & Son, low bidder on general contract.

1600 **Tons,** Philadelphia, Rittenhouse Sq. South Apartments, through McCloskey & Co., to Bethlehem Steel Co., Bethlehem.

1100 **Tons,** Hudson County, N. J., New Jersey Turnpike Authority, contract 35, Koppers Co., Baltimore, low bidder on general contract.

1070 **Tons,** Allentown, Pa., addition to dairy plant, Lehigh Valley Farm Cooperative, through H. E. Stout & Sons, to Bethlehem Contracting Co., Allentown, Pa.

590 **Tons,** Beatrice, Neb., bridge project er-U-/1/ to Omaha Steel Works, Omaha.

340 **Tons,** Wilmington, Del., Delaware Memorial Bridge, Contract 7A, Lewis & Bowman, Westernport, Md., low on general contract.

340 **Tons,** Colorado, 6 radio relay towers for A T and T to Blaw-Knox Co., Pittsburgh.

180 **Tons,** Waterloo, Ia., bridge project SN-1720, Blackhawk County, to Pittsburgh-Des Moines Steel Co., Des Moines, Ia.

135 **Tons,** Bismarck, N. D., hospital addition to Fargo Foundry Co., Fargo, N. D.

110 **Tons,** St. Louis County, Minn., bridge No. 7022 to American Bridge Co.

105 **Tons,** Newman, Calif., highway bridge spec. 3006 by Bureau of Reclamation to Gilmore Fabricators.

100 **Tons,** Buckland, Mass., steel stringer bridge. Warner Brothers, Sunderland, Mass., low bidder. C. B. Raymond, Greenfield, Mass., district engineer.

**Fabricated steel inquiries this week included the following:**

1300 **Tons,** Allegheny County, Pa., Pennsylvania Dept. of Highways LR 763/3/, due July 7.

1160 **Tons,** Lancaster County, Pa. Extension of one existing bridge and the construction of three concrete deck I-beam bridges. Secretary of Highways, Harrisburg, Pa. Bids to June 30.

346 **Tons,** Boston, Mass., underground traffic interchange for James J. Storrow Memorial Drive between Mt. Vernon st. and Dartmouth st. on Charles River Reservation, including earth and masonry excavation, backfilling, etc. Completion date Nov. 30, 1950.

197 **Tons,** Derby, Conn., clear span cantilever I beam bridge, grading and drainings over Mill st. on Shelton-Derby-Ansonia Expressway. E. T. Nettleton, New Haven, Conn., district engineer.

120 **Tons,** Lawrence County, Pa., Pennsylvania Turnpike Authority, section 29A, due July 6.

**Reinforcing bar inquiries this week included the following:**

1004 **Tons,** Boston, Mass., underground traffic interchange for James J. Storrow Memorial Drive between Mt. Vernon st. and Dartmouth st. on Charles River Reservation. Completion date Nov. 30, 1950.

484 **Tons,** Lancaster County, Pa. Extension of one existing bridge and the construction of three concrete deck I-beam bridges. Secretary of Highways, Harrisburg, Pa. Bids to June 30.

310 **Tons,** Racine, Wis., Western Print and Lithograph Co., building, Nelson and Co., contractors.

175 **Tons,** Chicago, Halsted Street Bridge, abandoned.

## Timken Sports Dinner Set

**Canton, Ohio** — Baseball Commissioner Happy Chandler was a speaker at the third annual Timken Roller Bearing Co. Championship Dinner honoring fall and winter sports greats of the firm. An invitational affair, the dinner took place on Monday, June 19, in the Swiss Club here. Also speaking were Bo McMillen, Detroit Lions football coach.

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This Wesix Electric Heater shows a typical application of Hendrick Perforated Metal, combining utility and attractiveness. The heater guard is 20 gauge steel, with 3/16" x 1½" side stagger perforations.

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## Elect Officeholders; Discuss Packaging, Handling

**New York**—Cost saving packaging and handling methods were the subject of a talk by E. H. Ashley, of General Electric, at the recent joint meeting of the New York Chapter of the American Materials Handling Society and the Management and Materials Handling Divs. of the American Society of Mechanical Engineers.

H. C. Bischoff was elected chairman of the New York Chapter, American Materials Handling Society, for one year and J. J. Dunlop, F. Echevarria, W. L. Fayle, B. W. Hupp, W. E. Ivory, A. E. Lynn, F. D. McCann, and T. J. McLernon were elected to the executive committee.

## Clark Voted EMMG President

**Pittsburgh** — Elections held at the annual June meeting of the Electric Metal Makers Guild recently resulted in naming D. L. Clark, superintendent of melting for the Simonds Saw and Steel Co., Lockport, N. Y., to the presidency.

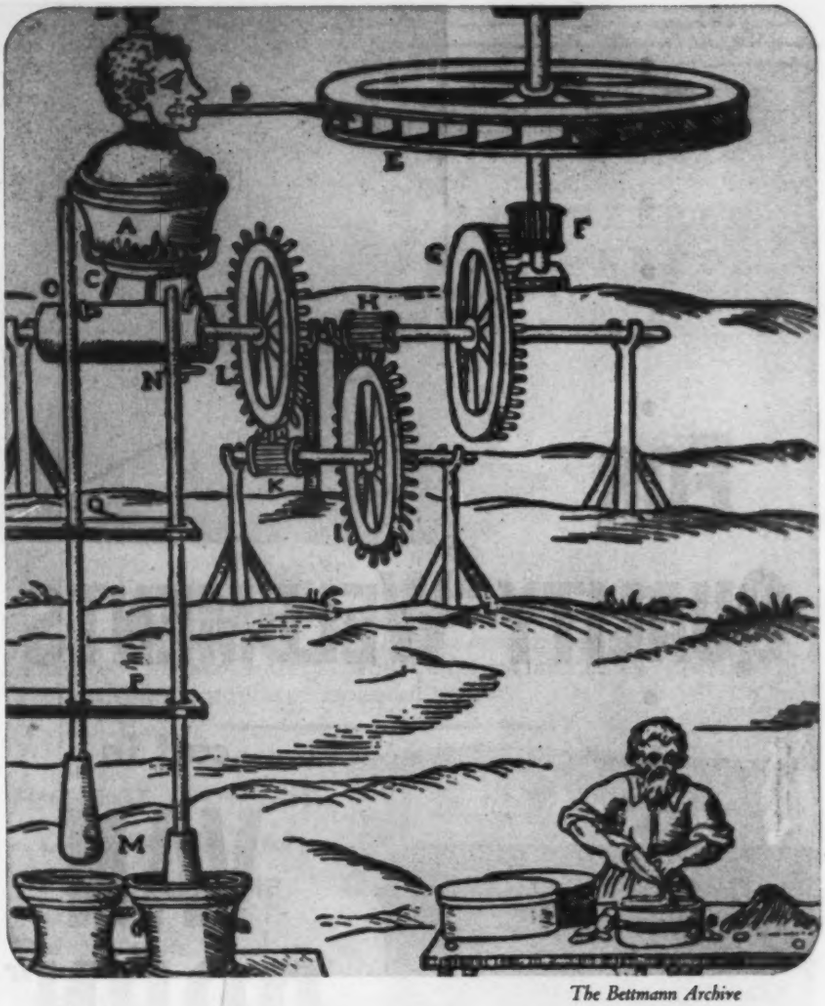
C. C. Spencer, superintendent of melting, Electric Steel Casting Co., Indianapolis, Ind., was voted vice-president, and R. J. McCurdy, of the South Chicago Republic Steel Corp., secretary-treasurer.

W. P. Dudley, secretary-treasurer of the Ohio Steel Foundry Co., Springfield, and Barton Rees Pogue, of Upland, Ind., spoke.

## Love Machine Co. Buys Merz

**Indianapolis, Ind.**—Physical assets and inventory of the Merz Engineering Co., 200 S. Harding St., producers of standard and special gages, precision aircraft products, special machinery, etc., have been bought by the Love Machine & Tool Co., maker of dies, jigs, and fixtures, also of this city.

Facilities of both firms will be joined in the Merz plant and business will continue under the name of the Merz Engineering Co. Production will include dies, jigs, and fixtures, and standard and automatic gages. Miklos Sperling is president.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# A Real "Head of Steam"

The first steam engine used for industrial purposes—designed by Branca in 1629—was an important step in man's effort to harness power for practical uses. But this application of steam power was obviously ineffective, and there was a further loss of power in its intricate and crude "gearing."

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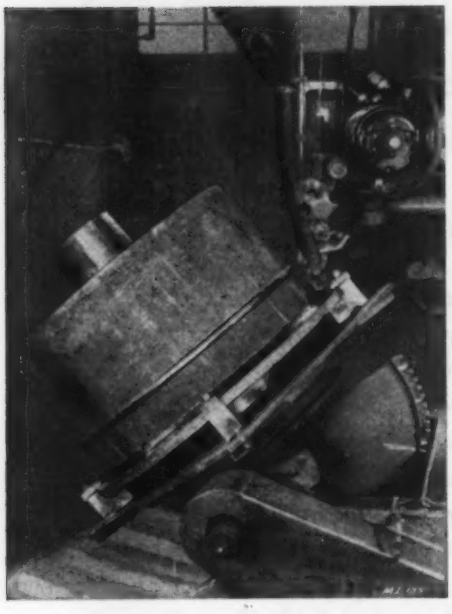

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*Profusely illustrated; describes the many advantages of Weldments, and Van Dorn's extensive facilities.*




## Stresses Training of New Blood

**Poland Springs, Me.**—Industrial management needs the expanded influx of young men trained under more adequate guidance programs, crafts standards, and improved on-the-job training systems, stated F. Kermit Donaldson, executive vice-president of the Steel Founders' Society of America in an address before delegates of the Sixth Annual Eastern Seaboard Apprenticeship Conference.

More than 600 representatives of management, labor, and government attended the 3-day conference held under the auspices of District No. 1, Bureau of Apprenticeship, U. S. Department of Labor.

## Railroad Rails Rerolled

**New York** — Twenty American and Canadian mills are kept busy rerolling old railroad rails into fence posts, bedsteads, clothes poles, and other useful products, reports the American Iron and Steel Institute.

The old rails are reheated, sliced into three parts and rolled. Principal products rolled are concrete reinforcing bars, structural tubing, and light rails. About 700,000 tons are rerolled each year.

## Plan Plant Inspection Trip

**Cleveland** — An inspection trip through the openhearth and blast furnace departments of the Cleveland Republic Steel Corp. plant will be made by members of the Northern Ohio Chapter, Institute of Scrap Iron & Steel, Inc., in the latter part of June, states Joseph B. Horwitz, president of the chapter.

## Navy Orders Steel Plate Hulls

**Washington** — The Navy Dept. has awarded the Worth Steel Co., Claymont, Del., a contract for 2,763,298 lb of steel hull plates at a price of $128,141.32. At the same time, it announced that Charles T. Brandt, Inc., Baltimore, was given a contract to supply 50 steel sonar domes for $83,500.

## Ryerson Vice-President Retires

**Chicago**—Resigning his office as vice-president and director of Joseph T. Ryerson & Son, Inc., steel warehousing concern, in 1949 for reasons of health, V. H. Dieterich has retired after more than 45 years of company service. For the past year he had served in a consulting and advisory capacity.

V. H. Dieterich

Mr. Dieterich was in charge of the structural fabricating and work order divisions of Ryerson for many years. He became assistant vice-president in 1934 and vice-president in 1937.

## Centrifix Buys Building

**Cleveland**—Centrifix Corp. has purchased a 3-story factory at 3608 Payne Ave. here to extend its light manufacturing and assembly of internal and line vapor separating and purifying equipment, announces Randall T. Elliot, president.

The factory contains 27,000 sq ft and will also house general offices and expanded sales and engineering departments. The purchase was made necessary by growing demands for high efficiency separation in industry, said the firm.

## Feted for 50 Years Service

**New York**—A testimonial dinner feting William G. Bickell, in charge of Bethlehem Steel Co. coal chemical sales, for 50 years service in the coal chemical industry was held last Friday at the Hotel Gotham.

Mr. Bickell started as an office boy with the Barrett Co., New York, before it became affiliated with the Allied Chemical & Dye Works. He then went into business on his own, later joined the Koppers Co., and finally entered Bethlehem service in 1931.


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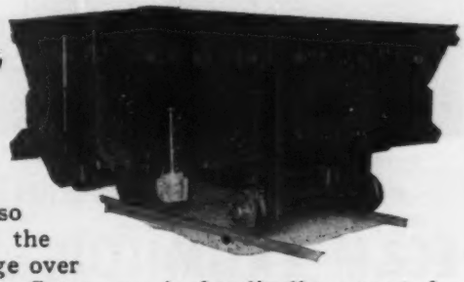

The discharge gates are so arranged as to spread the charge to the best advantage over the width of the furnace. Gates are hydraulically operated through a hand pump. Car is mounted on anti-friction roller bearings with spring mounted journals. Car provided with automatic engine couplers.

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## ECA Approves $5.1 Million Spending for Dutch Steel Plant

**Washington** — Purchase of $5.1 million worth of equipment and materials for the Royal Dutch Blast Furnace & Steel Co. project at Ijmuiden were among expenditures approved by the Economic Cooperation Administration last week.

Others included $1 million in machine tools for Italy; $4 million in motor vehicles and parts, Belgium and Luxembourg; $350,000, Belgium and Luxembourg; $500,000 Denmark; and $230,000 Austria.

Orders are now being negotiated under a previous $4.5 million authorization for the Milan Steel works in Italy. These include nearly $2 million for a 48-in. cold reversing mill with annealing furnaces and related equipment. $750,000 for seamless tube facilities, $550,000 for wire rod mill equipment, and $730,000 for plate mill equipment.

Steel production in major producing Marshall Plan countries for March was 4.1 million metric tons, an increase over February but about the same as a year ago, reported the ECA.

## Incomes Up in 1950

**Washington** — Personal income in April, exclusive of special veteran dividend payments, was at an annual rate of $212.8 billion, up slightly from March and $2 billion higher than for April '49.

Income rate for manufacturing industries was $59.4 billion, also up $2 billion from last year. Total manufacturing inventories at the end of April stood at $31 billion, down $2.9 billion from 1949.

## To Discuss Mutual Problems

**Philadelphia**—Mutual problems of a consuming mill and its scrap suppliers will be discussed when on June 27 the Worth Steel Co. plays host to Philadelphia, Chester, and Wilmington area scrap dealers at its Claymont, Del., plant. A plant tour will be held.

## Hotpoint Sees Sales Of Larger Home Freezers

**Chicago**—Paralleling the shift to larger refrigerators, consumer preference indicates that more than 50 pct of freezer sales in 1950 will be in 11-cu ft sizes or larger, stated Floyd M. Slasor of Hotpoint, Inc.

Despite a drop in shipments in 1949 from the previous year's peak of 690,000 units, Mr. Slasor said that the present rate of growth indicates that this appliance can reach a sales volume of 800,000 units in 1952, with a retail value in excess of $270 million.

## Iron Steel Exports Show Rise

**New York**—Iron and steel products exports of 4,685,462 tons in 1949 showed a slight rise over 1948 but remained the second lowest in the past 10 years, according to American Iron and Steel Institute and Department of Commerce statistics.

Exports in 1949 were over 8 pct of total shipments as compared with 6.6 pct in '48. Steel pipe exports of 834,183 tons set a record despite small other shipments, surpassing previous year tonnage by 38 pct.

Shipment records were made in exports of seamless and welding casing and oil line pipe with the sharpest increase in welded galvanized pipe—136 pct over 1948.

## Wyandotte Buys Pacific Plant

**Wyandotte, Mich.**—A revamped Pacific Chemical Plant of the American-Marietta Co., Los Angeles, will serve as a West Coast manufacturing unit for Los Angeles, San Francisco, and Seattle branches of the Wyandotte Chemicals Corp., a major producer of industrial chemicals and sanitizing compounds, reports Robert B. Semple, Wyandotte president.

Purchase of the plant was announced recently with no price disclosed. Pacific Chemical's plant and sales personnel will be absorbed by Wyandotte's Pacific Div. and research and technical service staffs.

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## Plan Mississippi Detour Around "Chain of Rocks" Channel

**St. Louis**—Three thousand tons of steelwork will be erected for Locks No. 27, the water detour designed to eliminate hazardous navigation during certain seasons of the year through the Chain of Rocks channel of the Mississippi River near here.

Fabricating and erecting of the steelwork will be done by the American Bridge Co., a U. S. Steel Corp. subsidiary. Most of the fabricating will be done at the bridge company's Gary, Ind., plant.

The locks are the largest in the Mississippi River system. Total cost of the project is estimated at $18 million. The main and auxiliary locks are scheduled for completion by the end of next September.

## Carnegie Tech Head Retires

**Pittsburgh** — Dr. Robert E. Doherty, president of the Carnegie Institute of Technology since 1936 and institutor of the Carnegie Plan of professional education at Tech, will retire July 1. He will be succeeded by Dr. J. C. Warner, formerly Dean of Graduate Studies.

Dr. Doherty, 65, an electrical engineer, came to Tech from Yale University. He served with General Electric Co. from 1909 to 1931 as consulting engineer and head of the firm's educational program. For 6 years he was assistant to Dr. Charles P. Steinmetz while with GE.

## Fixture Shipments Gain

**Washington** — Shipments of porcelain enameled steel plumbing fixtures during the first quarter of this year were valued at $11.9 million, approximately 56 pct better than shipments for the same period of 1949, according to the Porcelain Enamel Institute.

While total plumbing fixture shipments were off 2 pct from the fourth quarter of 1949, porcelain enameled steel fixtures were up 2 pct dollarwise.

## What Time Is It?

New York—Robert Kane of F. H. McGraw & Co., recently missed a train because he was confused, like many before him, by daylight saving vs standard time. But this gave him an idea. He had a card printed with all principal cities in the U. S. and Canada classified according to daylight saving time or standard time.

The idea worked so well that a lot of top-drawer executives are now carrying Bob's card in their wallet for handy reference. Many of them have ordered an additional supply to distribute among their personnel. Bob says the cards are free if you write to F. H. McGraw & Co. at 51 East 42nd Street, New York City.

## Receives Diesel Orders

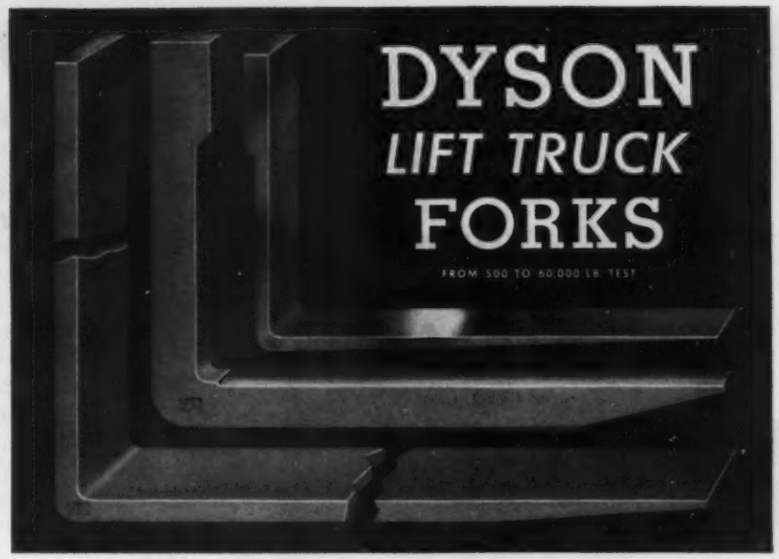
New York—The Lima-Hamilton Corp. has received orders for two 21½-in. bore, 27½-in. stroke, rotary valve, two-cycle diesel engines. One is an 8-cylinder 3570-hp marine diesel and the other is a 6-cylinder unit to drive a 2000-kw dc generator. The latter is designed so that it may be converted easily to dual fuel operation.

## Barstow Marks 50th Year at Dow

Detroit — Starting as a staff chemist, Dr. Edwin O. Barstow, now vice-president of the Dow Chemical Co., Midland, Mich., observed his fiftieth anniversary with the company on June 13. Dr. Dow, who holds 58 patents in his own name, became a director in 1931 and a vice-president in 1941.

## Kaiser Gets $35 Million Order

Oakland, Calif.—A new $35 million contract has pushed Kaiser Steel Corp. orders for gas and oil pipelines to a total of more than $100 million. According to Henry J. Kaiser, this represents over 750,000 tons of steel or enough pipe to reach from Los Angeles to New York and then to Miami.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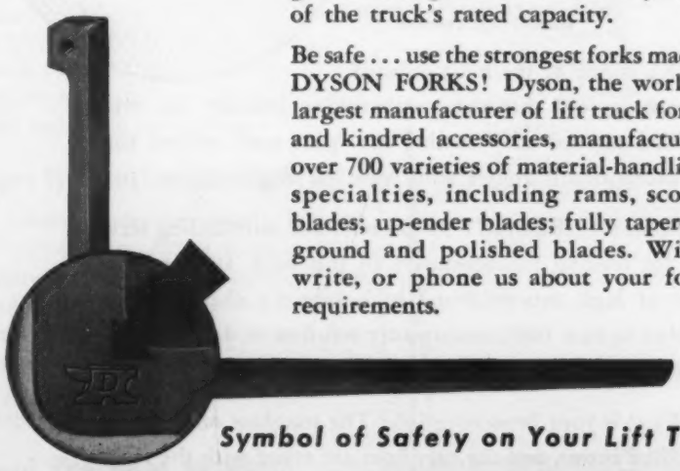

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"ThredKuT 99 smooths out tough "PINE TREE" Broaching Job!

Inset below. Sketch of "pine tree" slot broached in jet engine disc.

Photograph Courtesy The Lapointe Machine Tool Company

HERE is one of the most difficult broaching jobs that the metalworking industry has ever tackled and solved — cutting the "pine tree" shaped slot in exceptionally tough alloy steel jet engine discs.

Stuart's THREDKUT 99 has rendered outstanding service for leading manufacturers in this field. Its combination of high anti-weld and high lubricity characteristics proved to be a 100% satisfactory solution to difficulties of this job.

What is your broaching job? The toughest ones can be handled better, and the easy ones are easier with the right Stuart products! Ask for Stuart's pamphlet OILS FOR BROACHING or call your nearby Stuart representative.

D.A. Stuart Oil CO.

2737 So. Troy St., Chicago 23, Illinois




## Chrysler 25 Year History Shows Steady Progress to Top

**Detroit**—The automotive titan that is Chrysler, this month at its twenty-fifth anniversary point, resembles little of the Chrysler of yesterday when the late Walter Chrysler introduced the Maxwell Four and the Chrysler Six.

By present standards, Chrysler was then an industrial pygmy with a mere 3.6 million sq ft of floor space and burdened with a $53 million debt. It had a net worth of $19.5 million.

### Record Production

Chrysler bought Dodge and introduced Plymouth within 3 years and started its swift trek to a position in the Big Three. Now it has 28 plants with a floor space of 25 million sq ft. Net worth is $466 million and no long term debts exist.

Rumors now persist that the firm has plans to enlarge greatly its engineering program. After a crippling strike Chrysler recovered and its assembly lines are turning out a record 8000 units per day. New models are going into final stages and momentous decisions on automatic transmissions are pending.

With brand new body styling, a new high compression engine, and possibly a new transmission scheduled for introduction in 2 years, the public will judge for itself whether or not Chrysler retains the engineering skill that contributed to its initial success.

## Request FPC Authority

**Washington**—Three Mississippi cities in the Blue Mountain area have asked the Federal Power Commission to order Tennessee Gas Transmission to furnish gas for a proposed pipeline system to serve the three centers. The cities would construct their own 50-mile 6-in. line facilities at a cost of $1,445,000.

Transcontinental Gas Pipeline Corp. has requested authority to build additional compressor facilities, at a cost of $5,339,400.

A Light Casting Is the Right Casting

THE right casting for you might be an aircraft part a rubber goods part textile machinery automotive portable tool application implement or vacuum cleaner part.

The right casting might well be a light casting.

There are several good reasons why it *will* be right if it's *Well-Cast*, in either aluminum, magnesium or bronze:

- Our 40 years experience
- 3 complete plants
- A national reputation for good service
- The economy-in-use of light metals
- A long list of satisfied customers
- Facilities to produce sand, semi-permanent or permanent mold castings

Let's hear from you. Tell us your problem and we'll tell you whether a light casting is the right casting. *Catalog No. 50 on request.*

*Well-Made Wood and Metal Patterns*

THE WELLMAN Bronze & Aluminum Co.

2511 EAST 93rd STREET
CLEVELAND 4, OHIO


## Anniversary of Mine Safety Contest Marked by New Record

**New York**—The twenty-fifth anniversary of the National Safety Competition sponsored by the Bureau of Mines at the instigation of former president Herbert Hoover was appropriately marked in 1949 with the attainment of the best safety record by domestic mineral industries.

In a statement announcing winners of the Sentinels of Safety trophies, the Bureau of Mines reported recently that 202 mines and quarries had injury-free records last year.

### Trophy Winners Listed

Trophy winners by category include: anthracite mines, Stevens Shaft Mine, Kehoe-Berge Coal Co., Exeter, Pa.; bituminous-coal, Reliance No. 7 Mine, The Union Pacific Coal Co., Reliance, Wyoming; nonmetallic mines, Bellefonte Mine, National Gypsum Co., Bellefonte, Pa.; open-pit mines, Embarrass Mine, Pickands Mather & Co., Biwabik, Minn.; and quarries, Dolonah Quarry, Tennessee Coal, Iron and Railroad Co., Bessemer, Ala.

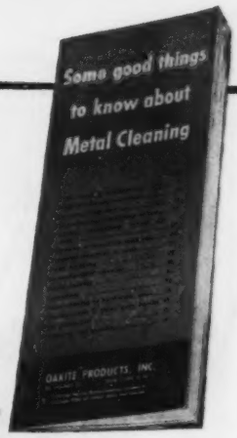
Forrest T. Moyer, of the Bureau of Mines, reported that 1949 contest enrollment of 646 mines and quarries was triple the enrollment in 1925. Total worktime was more than 146 million manhours at an injury-severity rate of 5.56 days lost per 1000 manhours.

## Navy to Transfer Landing Craft

**Washington**—Six 158-ft, 250-ton Navy landing craft are being overhauled at the Puget Sound Shipyard, Bremerton, Wash., prior to transfer under the Defense Assistance Program. They will be sent to Indo-China, the Defense Dept. said.

## Lead Use Rises in March

**Washington**—Total March lead consumption was 81,597 tons, about 16 pct above the February figure. Consumers' stocks fell 6 pct to 89,533 tons and imports dropped 32 pct from 41,723 tons to 28,220 tons in March.


Which of your metal-cleaning jobs would you like to improve?

Listed below are some of the operations discussed in Oakite's new 44-page illustrated booklet on Metal Cleaning. Please check the list. Then let us show you how Oakite materials and methods can give you better production with greater economy.

OAKITE PRODUCTS, INC.
30H Thames St., N. Y. 6, N. Y.

*Tell me (without obligation on my part) about Oakite methods and materials for the following jobs:*

- ☐ Tank cleaning
- ☐ Machine cleaning
- ☐ Electrocleaning
- ☐ Pickling
- ☐ Pre-paint treatment
- ☐ Paint stripping
- ☐ Steam-detergent cleaning
- ☐ Barrel cleaning
- ☐ Burnishing
- ☐ Rust prevention
- ☐ Send me a FREE copy of your booklet "Some good things to know about Metal Cleaning"

NAME.....
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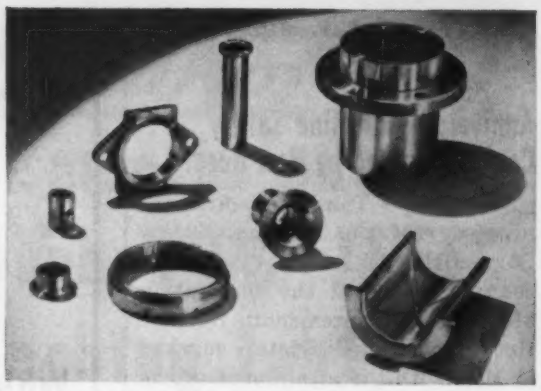
.....

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

*Technical Service Representatives Located in Principal Cities of United States and Canada*



CONTRACT MACHINING

**is our business . . .**

For 40 years NON-GRAN has built a reputation for machining parts to exact specifications—to aircraft tolerances where indicated—and delivering on schedule, at the lowest possible cost. We also sand and centrifugally cast bronze alloys.

Learn today how NON-GRAN contract service can cut your costs, speed your work. Send specifications for quotation. AMERICAN NON-GRAN BRONZE CO., Berwyn, Pa. *Metropolitan Philadelphia, on the Pennsylvania R. R. main line.*

NON-GRAN

The *knurling* on the head of the UNBRAKO Socket Head Cap Screw saves valuable assembly time because the UNBRAKO can be screwed in faster and further with the fingers—the handiest of all wrenches—before a wrench is needed. The slip-proof knurling "gears" the screw to the fingers, even when they are oily or greasy . . . this is especially important in the smaller sizes.

So, use Knurled UNBRAKO Socket Head Cap Screws and *save time and money.*

Write for further information.

SOCKET UNBRAKO SCREWS

SPS STANDARD PRESSED STEEL CO.
JENKINTOWN 17, PENNSYLVANIA




## Executive Committee Named By Secondary Metal Institute

**New York**—Edwin A. Bergman, president of the Secondary Metal Institute, National Ass'n. of Waste Material Dealers, Inc., has announced appointment of the group's executive committee. Members are: Herman Bittner, Al Cohn, H. A. Frutig, Herman Galamba, William Glassenberg, H. L. Green, J. W. Grodin.

Also: Carl Gross, Joseph Harris, R. H. Hiles, David Jackson, Henry Levitt, R. Liberman, Louis Lippa, Herman Oschell, Leo Peters, Philip Scheibner, Irving Silmore, Milton M. Silverstein, Emanuel Singer, Jonas Adler, Mike Helbein, and A. J. Safer. Hugo Simon is the Institute's vice-president.

## Operation for '50 Assured

**Birmingham**—With sufficient orders to keep it operating for the balance of 1950, Pullman Standard Car Manufacturing Co.'s Bessemer plant here has the largest employment since early 1949—1400 men, the firm announces.

## GM Betters Diesel Output

**LaGrange, Ill.**—A record production of 200 diesel locomotives per month was attained by the Electro-Motive Div. of General Motors last March, according to C. R. Osborn, GM vice-president and general manager of Electro-Motive.

## Approves $117 Million Pipeline

**New York**—Building of a $117 million pipeline from Texas to Iowa, Illinois, and Indiana by the Texas Illinois Natural Gas Pipeline Co. was authorized recently in Washington by the Federal Power Commission.

## Predicts Top Sales Year

**Chicago**—This will be a top sales year for production of electric ranges, according to R. M. Beatty, manager of the electric range department of the Westinghouse Electric Appliance Div.

## Firms Get Merit Awards For Promoting Wise Owl Club

**New York**—If an industrial worker is lucky he can gain membership into the select Wise Owl Club of America. He must have been fortunate enough to have been saved from total or partial blindness by safety goggles and must submit burned or shattered goggles as evidence.

Recently at a meeting here of industrial and civic leaders, eight firms received certificates of appreciation from the National Society to Prevent Blindness in recognition for "outstanding service" in promoting the Wise Owl Club. The club has 991 members and is adding more men saved from blindness at the rate of 70 per month.

## Seek Better Rail Terms

**Washington** — The Interstate Commerce Commission is considering the request of a group of southern railroads for relief from long-and-short-haul provisions of the ICC Act on shipments of pig iron from Daingerfield and Lone Star, Texas, to Toccoa, Georgia.

The carriers claim the requested relief is necessary because of competition from other rail carriers and the circuitous routes over which they operate.

"Honestly, Clarence. I don't mind kissing you when you come home from a hard day's work in the coal mines, but after this wash up!"


**Not cut...Not cast...**
**...but Precision**
**FORGED**
**by AMGEARS!***

Yes! Amgears is now supplying precision FORGED-TOOTH spurs, bevels, sprockets and clutches at savings in cost, compared with cut gears, up to 50 percent.

You can get *precision forged gears* from 3 diametrical pitch to approximately 10 diametrical pitch. Some of these gears are operating up to 600 rpm. and 800 fpm. pitch line velocity. They can be forged from any low or medium carbon and alloy-steel, heat treated or case hardened as desired.

**Send blueprints or specifications** giving shaft speeds, horsepower, center distances and gear ratios. Our designers will tell you promptly what Amgears can do to save you money or eliminate gear failures.

**Also: Production and Precision Cut and Ground Gears**

Unparalleled production and design facilities for spurs, sprockets, helicals, worms and wormgears; straight and spiral bevel gears and racks. Write for helpful CASE HISTORIES! *AM... *Accurately Made*

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AMGEARS, INC.
CHICAGO 38, ILLINOIS
A SUBSIDIARY OF HUPP CORPORATION
CONTRACT MANUFACTURERS
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One *Euclid* 10 ton Overhead Crane
+ One *Euclid* 3 ton Semi-Gantry Crane
**SOLVES A TOUGH PROBLEM**
IN PARTS HANDLING

Handling costs were sharply curtailed with considerable reduction in manhours per unit assembly.

Overhead crane moves material to be processed to fabricating bay where floor controlled semi-gantry crane is utilized in welding of sub-assemblies.

A Euclid proposal for your particular plant is available without obligation.
**Write for complete information.**

EUCLID CRANES AND HOISTS
Raise Profits

THE EUCLID CRANE & HOIST CO.
1361 CHARDON ROAD • EUCLID, OHIO

# NEW HEAVY-DUTY CART

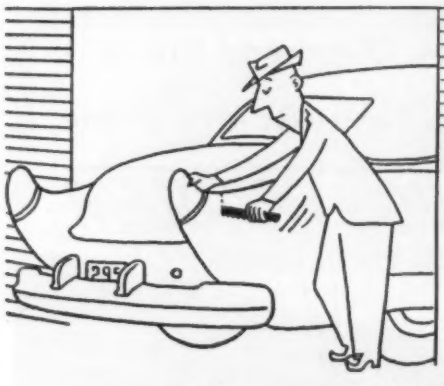
Here's just the cart you need for wheeling *coal, scrap, chips, turnings, borings* and similar heavy materials. All-steel, completely welded and reinforced. Made extra strong and rugged for heavy duty service. Dumps easily. Rests securely in any one of the three positions shown here. Available with roller bearings, if desired.

*Write for Circular No. 50.*

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS



# It's the CUT that COUNTS

## and Capewell HACK SAW BLADES Offer 2 Exclusive Advantages . . .

Ask Your Distributor about . . .

Capewell hack saw blades and frames, band saws (in coils or welded), Dafiles, ground flat stock, compass and keyhole saws, hammers.

1 A bonus of 10% additional cutting—because Capewell's exclusive "Statistical Quality Control" raises standards and eliminates sub-standard blades.

2 Instructions printed right on the hand hack saw blades indicating correct use.

1881 CAPEWELL THE KEY TO ECONOMY

THE CAPEWELL MFG. CO. DEPT. 76, HARTFORD 2, CONN.


## Dates to Remember

**June 22-23—Malleable Founders' Society,** annual meeting, The Homestead, Hot Springs, Va. Society headquarters are in the Union Commerce Bldg., Cleveland.

**June 26-30—American Society for Testing Materials,** annual meeting and exhibit, Chalfonte-Haddon Hall, Atlantic City, N. J. Society headquarters are at 1916 Race St., Philadelphia.

**June 29-July 1—National Industrial Advertisers Assn.,** annual conference, Biltmore Hotel, Los Angeles. Association headquarters are at 1776 Broadway, New York.

**Sept. 5-9—National Chemical Exposition,** Chicago Coliseum, Chicago. American Chemical Society, Chicago Section headquarters are at 86 E. Randolph St., Chicago.

**Sept. 12-14—Society of Automotive Engineers,** tractor meeting, Hotel Schroeder, Milwaukee. Society headquarters are at 29 W. 39th St., New York.

**Sept. 13-15—National Petroleum Assn.,** annual meeting, Hotel Traymore, Atlantic City, N. J., Association, headquarters are in the Munsey Bldg., Washington.

**Sept. 18-22—Instrument Society of America,** conference and exhibit, Memorial Auditorium, Buffalo. Society headquarters are at 921 Ridge Ave., Pittsburgh.

**Sept. 19-21—American Society of Mechanical Engineers,** fall meeting, Hotel Sheraton, Worcester. Society headquarters are at 29 W. 39th St., New York.

**Sept. 23-26—Packaging Machinery Manufacturers Institute,** annual meeting, Homestead, Hot Springs, Va. Institute headquarters are at 342 Madison Ave., New York.

**Sept. 26-29—Assn. of Iron & Steel Engineers,** exposition and annual convention, Public Auditorum, Cleveland. Association headquarters are in the Empire Bldg., Pittsburgh.

**Sept. 27-30—Society of Automotive Engineers,** aeronautic meeting and engineering display, Biltmore Hotel, Los Angeles. Society headquarters are at 29 W. 39th St., New York.

**Oct. 6-8—National Assn. of Waste Material Dealers,** fall meeting, Hotel Traymore, Atlantic City, N. J. Association headquarters are in the Times Bldg., New York.

**Oct. 10-12—Society of Industrial Packaging & Materials Handling Engineers,** exposition, Convention Hall, Philadelphia. Society headquarters are at 20 W. Jackson Blvd., Chicago.

**Oct. 12-13—Gray Iron Founders' Society,** annual meeting, Netherlands Plaza Hotel, Cincinnati. Society headquarters are at 210 National City-E. 6th Bldg., Cleveland.

**Oct. 16-18—Society of Automotive Engineers,** transportation meeting, Hotel Statler, New York. Society headquarters are at 29 W. 39th St., New York.

**Oct. 23-27—National Metal Congress & Exposition,** International Amphitheater, Chicago. American Society for Metals headquarters are at 7301 Euclid Ave., Cleveland.

# *Announcing*
# UDYLITE *and* STEVENS CONSOLIDATION

## *65-Year-Old Company Becomes Subsidiary of The Udylite Corporation*

The Udylite Corporation has acquired the entire capital stock of Frederic B. Stevens, Inc., and its wholly owned subsidiaries—the Mitchell Engineering Company of Springfield, Ohio, and Frederic B. Stevens of Canada, Ltd., a Dominion Corporation.

The merging of these two old firms—each a leader in its chosen field—will add to Udylite's famed plating products and solutions, the Stevens machinery, machine tools, equipment and compositions for plating, buffing and polishing, foundry supplies, face brick and glazed tile.

For a quarter century, The Udylite Corporation has pioneered techniques, equipment and processes for *a better way* in plating and finishing.

The Stevens background, personnel and products round out a Udylite service to the durable goods industries that ranges from conversion of raw metal in the foundry to highly polished surfaces of finished, utilitarian units.

Stevens factories and warehouses in Buffalo, New York; New Haven, Conn.; Springfield, Ohio; Windsor, Ontario, and two plants and a laboratory in Detroit—as well as the Stevens sales staffs in Cleveland, New Haven, Indianapolis, Buffalo and Windsor, will offer Udylite customers additional service points.

The scientifically trained and integrated Udylite-Stevens technical sales staff will bring to American industry a new conception of "Metal Magic."

***The Udylite Corporation, Detroit 11, Michigan***

"Bah! SQUINTING again, Plunkett!"

Squinting *at your market? Why be satisfied with a mere keyhole view? Unlock the door with* pre-coated *THOMAS STRIP and step through to scan your potential market from horizon to horizon. It may be much broader than you think!*

★ ★ ★

For your start toward capturing this broader market, take a long look at the sales and cost advantages today's better-than-ever BRASS COATED THOMAS STRIP offers.

To help you *upgrade your products*—quality-wise, design-wise, otherwise—and to help you *cut unit costs,* we now can furnish BRASS COATED THOMAS STRIP *up to 20-inches wide,* in gauges .010 to .035. Through improved production facilities, this tight brass coating—unitized with a steel base of controlled metallurgy—now is even more generous than ever . . . better able to stand up under severe fabrication without cracking, peeling or flaking!

Use it to eliminate much costly surface preparation before fabrication, much cleaning, plating, buffing after . . . to give fabricated parts a uniform brass coating *inside and out* . . . to protect parts in process against corrosion. The brass coating can be readily oxidized to provide a variety of decorative finishes.

Available natural, planished and buffed, BRASS COATED THOMAS STRIP can serve equally well as your final product finish and as a prepared base for further plating. And, for long-lasting protection, lighter gauges in widths up to 7½-inches can be furnished already coated with clear lacquer.

Its range of widths, gauges and characteristics, as well as finishes, now is so broad that BRASS COATED THOMAS STRIP opens your horizons wide for product redesign and new product development. Why not let us study your products nad process to recommend the metallurgically right *pre-coated* THOMAS STRIP that will capture new markets for you? Just write:

THE THOMAS STEEL COMPANY
WARREN, OHIO
*Specialists in Cold Rolled Strip Steel*

Thomas Strip
SPEEDS PRODUCTION . . . CUTS COSTS

COLD ROLLED STRIP STEEL

Electrocoated with Chromium, Nickel, Brass, Copper and Zinc • Hot Dipped Tin and Lead Alloy • Lacquer Coated in Colors • Annealed Spring Steel • Alloy Strip Steel • Uncoated Strip Steel • Produced to Your Specifications.

# FREE

## PUBLICATIONS

*Continued from Page 36*

er illustrating various models and listing specifications. *Graham-Mintel Instrument Co.*

**For free copy insert No. 10 on postcard, p. 37.**

### Handling Phosphoric Acid

Equipment and procedures for handling 75 pct phosphoric acid in tank car quantities are described in a new 8-p. booklet. In addition to specifications for tanks, pumps and pipes, the illustrated pamphlet includes step-by-step explanations of several methods of unloading phosphoric acid cars, from spotting to preparing car for return. *Monsanto Chemical Co.*

**For free copy insert No. 11 on postcard, p. 37.**

### Dual Purpose Coating

Combining aluminum paint and zinc chromate primer to supply a brilliant aluminum protective finish and at the same time provide its own rust inhibitive primer, Aluma-Chrome will also arrest rusting action already on metal surfaces, as described in a new data sheet. *Garland Co.*

**For free copy insert No. 12 on postcard, p. 37.**

### Long Flute Drills

National No. 2101 long flute drills, claiming more holes per grind, more grinds per drill and less tool breakage, are described in a new 10-p. pamphlet listing specifications and advantages. *National Twist Drill & Tool Co.*

**For free copy insert No. 13 on postcard, p. 37.**

### Employee Pension Plans

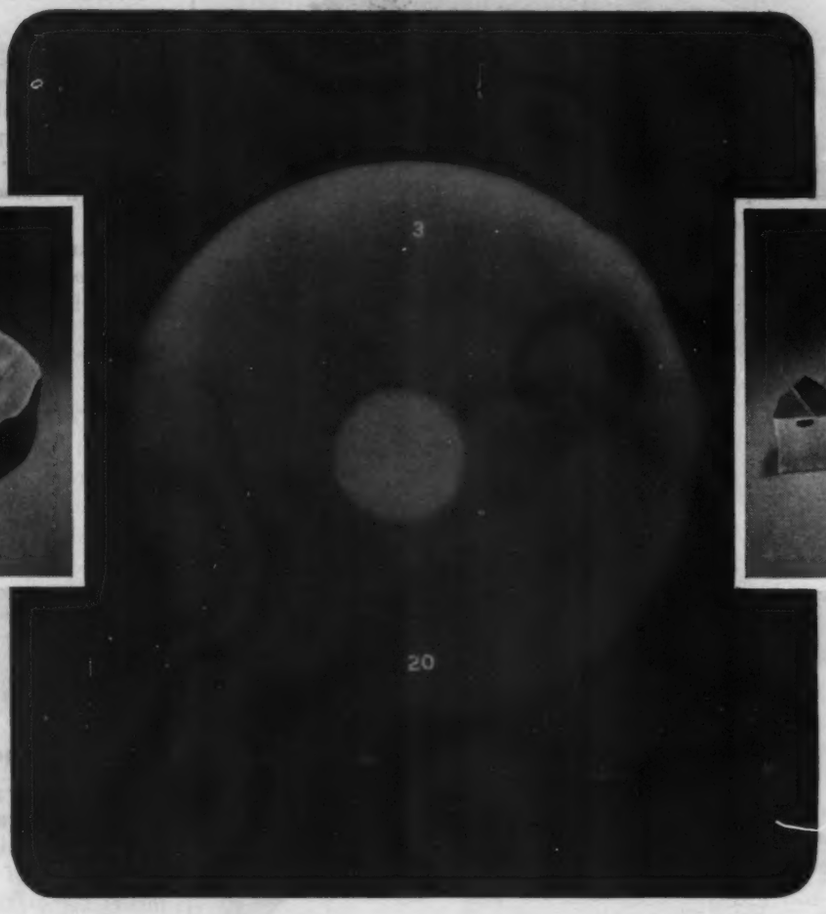
The big question: "How much Does a Pension Cost?" is raised in a new booklet about employee pension plans. The booklet presents an outline of a pension plan, discusses gross cost and factors for reducing it, and how more liberal benefits add to cost. *City Bank Farmers Trust Co.*

**For free copy insert No. 14 on postcard, p. 37.**

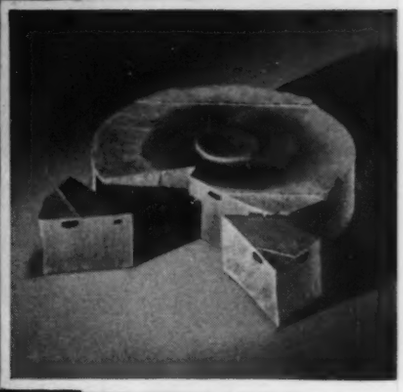
### Protective Helmets

A new 4-p. bulletin describes personal protection equipment for shot and sand blasters. Featured in the

Aluminum alloy casting 2¼x11¼" for aircraft accessory part.



Radiograph which revealed defect in casting.



Section reveals hole detected by radiography.

# Minutes of Radiography saved hours of machining

AFTER machining, this aluminum alloy casting was to be an important part in an aircraft accessory, vital to high-altitude flying. The finished part was needed quickly by the customer. Design specifications demanded high quality.

This was no time to wait for machining to disclose any defects. There was too much to lose —setup time, machining time, take-down time, as well as the reputation of the foundry.

Radiography saved all that. In a few minutes it revealed a defect that caused rejection of the rough casting at the foundry. Other castings, proved sound by radiography, were sent to the customer.

Cases like this show how more and more foundries are able to release only sound castings. Perhaps even more important, radiography is showing how to make consistently sound castings, by picturing the internal effects of changes in gating, venting, chilling, pouring temperature, and other variables.

Ask your x-ray dealer to explain how radiography can help you increase yield and cut costs.

**EASTMAN KODAK COMPANY**
**X-Ray Division, Rochester 4, New York**

## Radiography . . .

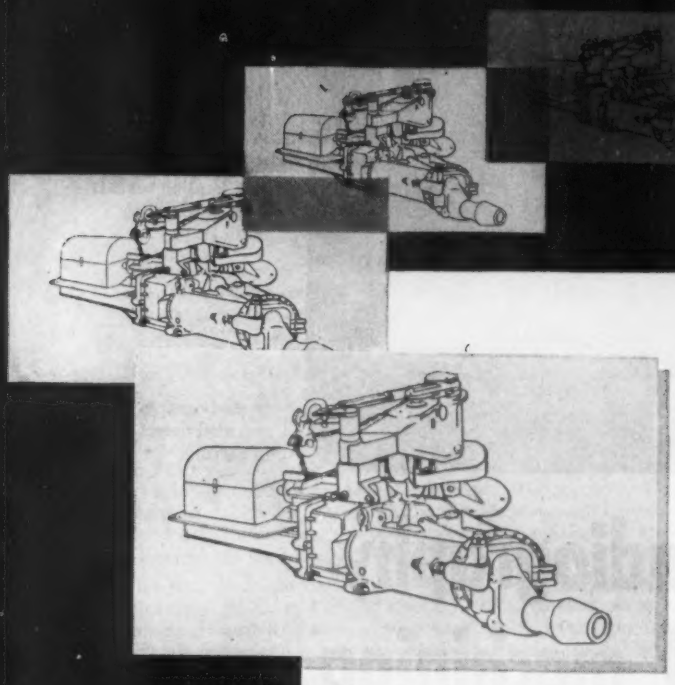
**another important function of photography**

Kodak
TRADE-MARK

Remember to specify

# BROSIUS

for ruggedly built
more efficient Clay Guns



Here are two very good reasons why Brosius Clay Guns are so highly practical to operate and maintain. First, they are backed by many years of specific blast furnace engineering skill and experience; and second, each gun is individually designed, machined, assembled, inspected, and tested at the Brosius factory. For more information and literature on sturdy low-cost electric-mechanical, electric-hydraulic or steam guns, simply write to us.

Edgar E. BROSIUS Company Inc.
SHARPSBURG • PITTSBURGH 12, PA.

## FREE PUBLICATIONS

*Continued*

bulletin are the MSA abrasive mask and Blastfoe abrasive helmet, two airline-type respirators with protective hoods for protection against the high velocity abrasives and harmful dusts found in shot and sand blasting rooms. Detailed information on air supply accessories is also included. *Mine Safety Appliances Co.*

**For free copy insert No. 15 on postcard, p. 37.**

### Cuts Handling Costs

Littell patented automatic centering reels for reduced handling costs and increased production in shops using coil stock are described in a 4-p. folder. Various models for efficient feeding and coiling of strip stock are shown, including motor driven types. *F. J. Littell Machine Co.*

**For free copy insert No. 16 on postcard, p. 37.**

### Quick Change Bar Shear

The Kling guillotine type bar shear, with arrangement of the slide and bolster designed to permit quick interchange of the various attachments for cutting rounds, squares, flats and angles, is described on several data sheets. Special features of the equipment are discussed, and specifications are listed. *Kling Bros. Engineering Works.*

**For free copy insert No. 17 on postcard, p. 37.**

### 20-mph Pickup Truck

Embodying rugged construction with low maintenance cost, the new Totemaster pickup truck will handle miscellaneous loads up to a ton at any desired speed up to 20 mph, as described in an illustrated 4-p. folder. Complete specifications are listed, main features of the truck are described and three-view dimensional drawings are included. *Lewis-Shepard Products Inc.*

**For free copy insert No. 18 on postcard, p. 37.**

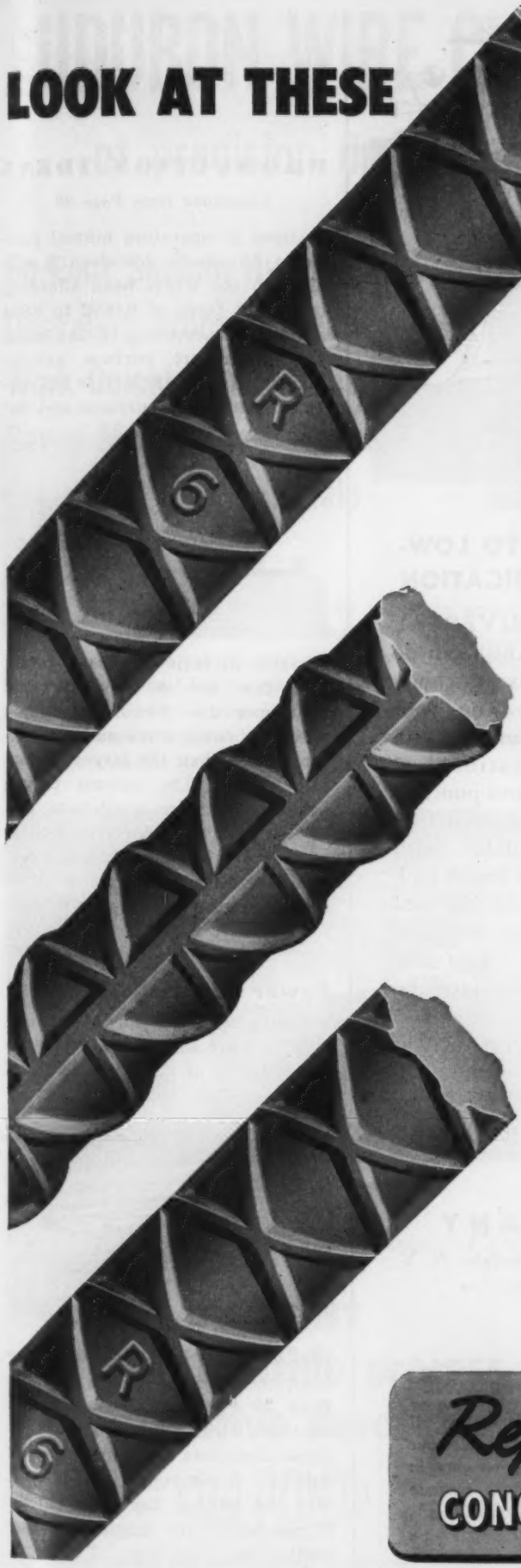
### Protects Concrete Floors

Why you get a better floor with Armor resurfacer is the subject of two new 4-p. bulletins. Results of impartial laboratory tests are presented to substantiate claims that this material outlasts concrete every time. *Monroe Co., Inc.*

**For free copy insert No. 19 on postcard, p. 37.**

*Resume Your Reading on Page 37*

# LOOK AT THESE DEFORMATIONS



## on Republic's Diamond ◇ Design Concrete Reinforcing Bars

## *. . . they assure a better bond in concrete*

That's because they were designed to exceed ASTM Specification A-305-49—"Minimum Requirements for the Deformations of Deformed Steel Bars for Concrete Reinforcement."

This specification—adopted by ASTM in June, 1949—is the first standard specification to define the surface deformations on concrete reinforcing bars. It requires that the lugs or deformations be much higher and more closely spaced than heretofore, without change in standard foot weights.

The results: Greatly improved bonding properties and reinforcement anchorage—possible savings in steel, bending cost and installation.

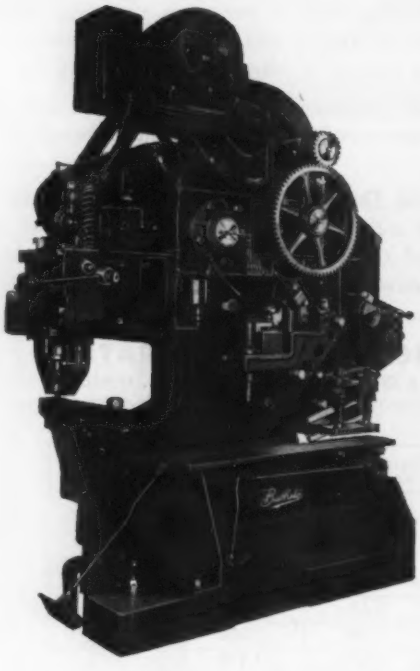
Republic's Diamond Design Concrete Reinforcing Bars are rolled only from new billet steel—at Cleveland, Buffalo, South Chicago and Gadsden. Check the table below for foot weights and new size designations—then write us for further information.

**REPUBLIC STEEL CORPORATION**
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

| Size Number | Cross-Sectional Area, sq. in. | Nominal Diameter, in. | Foot Weight, lbs. |
|---|---|---|---|
| 3 | 0.11 | 0.375 | .376 |
| 4 | 0.20 | 0.500 | .668 |
| 5 | 0.31 | 0.625 | 1.043 |
| 6 | 0.44 | 0.750 | 1.502 |
| 7 | 0.60 | 0.875 | 2.044 |
| 8 | 0.79 | 1.000 | 2.670 |
| 9 | 1.00 | 1.128 | 3.400 |
| 10 | 1.27 | 1.270 | 4.303 |
| 11 | 1.56 | 1.410 | 5.313 |

REPUBLIC STEEL

*Republic*
CONCRETE REINFORCING BARS



**YOUR KEY TO LOW-COST FABRICATION**

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"Buffalo" UNIVERSAL IRON WORKERS

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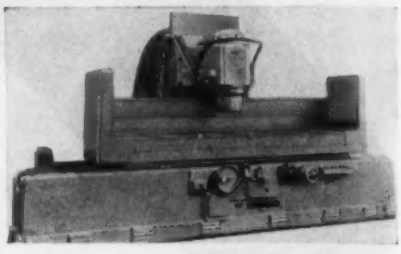
360-C for all details on all models available to suit your particular requirements in these rugged, fast, accurate multiple-operation machines.


## PRODUCTION IDEAS

*Continued from Page 38*

grouped at operators normal position. Automatic downfeed is supplied to the wheel head affording increment feeds of 0.0002 to 0.004 in. at each reversal of the table. The Hydrovert surface grinder illustrated can handle wide flat surfaces, obstructed surfaces and flat

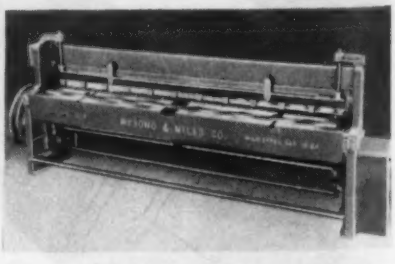


surfaces in various steps or levels, and can use a smaller wheel for deeper cuts. The sliding column moves to cover work many diameters wider than the largest grinding wheel. The column travels back and forth on a sub-base, giving either an intermittent feed at each reversal of the table, or a continuous feed, both from a single lever operation. *Thompson Grinder Co.*

**For more data insert No. 34 on postcard, p. 37.**

### Power Squaring Shears

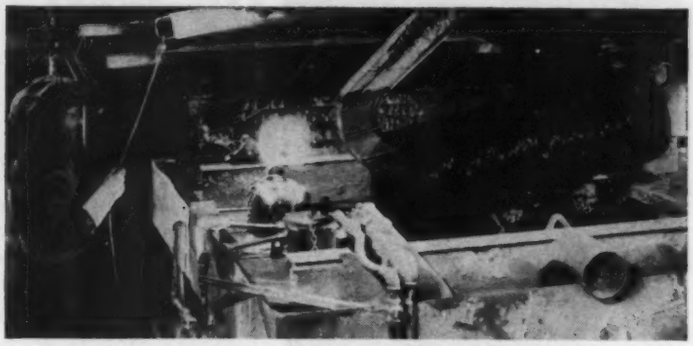
Power squaring shears for cutting 16 gage sheet metal have cutting lengths of 42, 52, 72, 96 and 120 in. Bed, end-frames, knife-



bar, holddown and top girder are one-piece castings containing more than 30 pct steel. The bed is squared with the end-frames in three directions to insure accurate cutting. A non-repeat unit is built into the sliding key type clutch. It can be set for single stroke or continuous shearing. The back

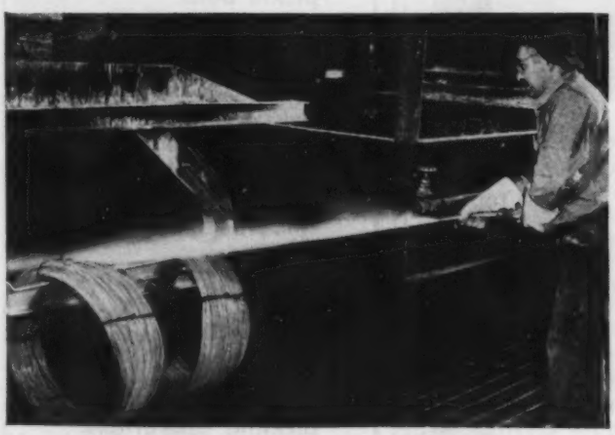
# AUDUBON WIRE CLOTH gets speedy descaling of precision drawn wire—with no metal loss!

## Du Pont Sodium Hydride Descaling Process Cleans Work Quickly and Efficiently--- Saves Metal, Time, Space, Equipment and Materials



Operator removes stainless steel wire from descaling bath—ready for quench, brightening and high pressure rinse.

The production of high grade wire for industrial screen cloth and continuous Flexible "Metalwove" Belts calls for clean, scale-free rod and wire. For this reason, in 1946, the Audubon Wire Cloth Corporation of Philadelphia installed a Du Pont Sodium Hydride Descaling Bath to clean thoroughly its stainless and alloy rod and wire of all sizes . . . easily, quickly and economically.



High pressure rinse completes the scale removal job.

Because the bath action stops when the scale has been penetrated down to the base metal, Audubon finds that its precision drawn wire can be descaled at the various sizes during processing without metal loss. This speedy cleaning method (work is in the bath only 15 to 20 minutes) has permitted cleaning time to be cut substantially. And, to speed production further, different metals can be handled simultaneously!

The bath is operated at 700° F. in a carbon steel tank, intermittently or continuously as the work demands. The compactness of the equipment, including the quench and rinse areas, permits a large volume of work to be handled in a relatively small space.

The success which the Audubon Wire Cloth Corporation and many other firms have had with this speedy, efficient descaling method may point the way to increased production and better products in your plant. For complete information about the process, mail the coupon below. It will bring you promptly a copy of "Du Pont Sodium Hydride Descaling Process" which tells how easily it can be installed to handle a wide range of work.

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*Firm* _____

*Position* _____

*Address* _____

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*"About 2 p.m. they called for an additional ton of angles and channels, also cut to size. All of this material had to be taken from storage, put on the cutting racks, marked, cut and shipped. At 4 that same day every piece was on the job."*

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LSS-4

**Levinson**

**STEEL SALES CO.**

PITTSBURGH, PA.




gage adjusts to 0.0078 in. An adjustable scales embedded in the table aid in positioning sheets. *Wysong & Miles Co.*

For more data insert No. 35 on postcard, p. 37.

## Taper Gage

The Taper-Chek fixture uses angle blocks to measure tapers. The proper combination of angle blocks is assembled and mounted with the work on the Taper-Chek, and an indicator reading is taken. This is said to take less than 2 min and taper is checked accurately to within 0.000020 in. in 4 in. The fixture consists of base and three

V blocks capable of holding and measuring any standard taper up to No. 50 milling machine taper, or any special taper in that size range. *Webber Gage Co.*

For more data insert No. 36 on postcard, p. 37.

## Motor Shock Absorber

A new motor shock absorber absorbs the jerk that is occasioned in across-the-line motor starting, and reduces the torque by permitting the motor to gain momentum before picking up the entire load. The device can be furnished for forward or reversing drives and for all motor sizes from ¼ to ¾ hp. *Crown Mfg. Co.*

For more data insert No. 37 on postcard, p. 37.

## Conveyer Lubricator

An automatic conveyer lubricator with multiple outlets for oiling chain-link-pins and trolley wheels has a manifold with 14 outlets, 2⅝ in. apart. Trolley wheels are lubricated by nozzles attached


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- ***Prolongs the life of the pickle bath.***
- ***Prevents over-pickling.***
- ***Minimizes hydrogen embrittlement.***
- ***Improves pickling . . . gives a brighter, cleaner, smoother surface.***
- ***Reduces acid fumes.***
- ***Improves working conditions.***
- ***Permits close control of pickling operations.***
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**AMERICAN CHEMICAL PAINT COMPANY**

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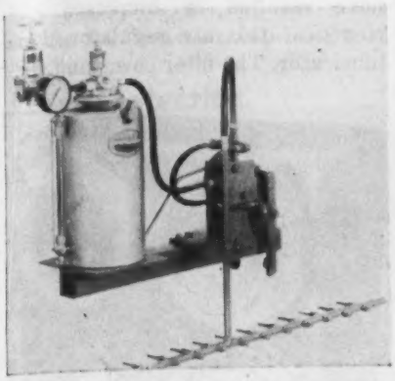
to the tripping mechanism and directed straight downward. The oil is directed at the point where the wheels rotate against the hub at

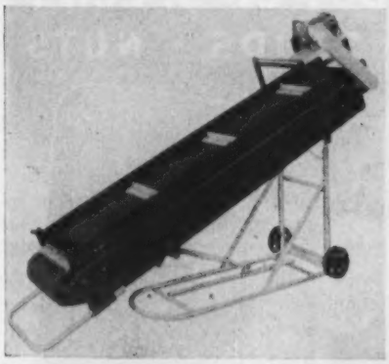


the end of the wheel pin bearings. The oil reservoir consists of a 2-gal container equipped with air regulator and pressure gage. The speed of the conveyer is 14 to 20 fpm. *J. N. Fauver Co., Inc.*

For more data insert No. 38 on postcard, p. 37.

## Forge Shop Conveyer

A portable power belt conveyer for handling forgings between operations in forge shops has a cleated wire-mesh belt unit that conveys hot or cold forgings weighing up to 25 lb. The Forge Press-



Veyor is available with belts 8, 12, or 16-in. wide x 4, 6, or 8 ft long. Steel cleats bolted to the belt prevent materials from lodging under the cleats. Six-inch diam pulleys and sealed self-aligning ball bearings give long life under severe operating condition. *Rapids Standard Co.*

For more data insert No. 39 on postcard, p. 37.

## Honing Tool

Called the Odee-Hone, a general purpose tool hones external surfaces of cylindrical parts with ½ to 2½ in. diam regardless of length or material. It may be used with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AlSiMag Strainer Cores are hard, precision made ceramic strainers. Sizes and openings are custom made for individual requirements. These cores strain the incoming metal and distribute its flow evenly. The result is more **GOOD** castings per hour per molder.

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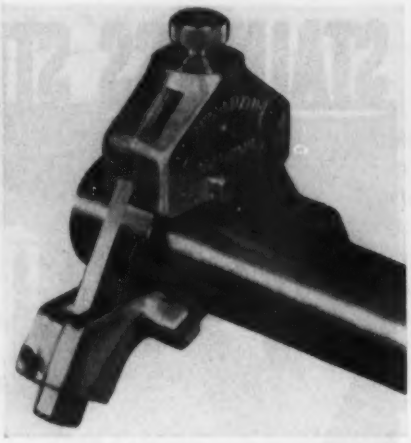
*Continued*

any lathe, drill press or electric drill. Diametric size can be held to 0.0001 in. by means of a calibrated feed dial that gives control



of the in-feed of the abrasive. The Odee-Hone is lightweight and has no springs, screws or hinges. It requires no aligning, fixturing or wheel dressing. *Micromatic Hone Corp.*

For more data insert No. 40 on postcard, p. 37.

## Air Regulator-Filter

A piston-type regulator and synthetic-type filtering element now incorporated in the R-F-L unit have resulted in increased efficiency of this air regulator-filter-lubricator. The filter cover and reg-

ulating valve now screw into the main body of the unit. The R-F-L unit is a compact casting measuring 6 in. square x 4¾ in. deep. It is installed in the air intake line from the main air line. Two knobs on the front panel permit accurate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regulation of air pressure and amount of oil injected as required. Indicators provide visibility of both air pressure and oil level. *Logansport Machine Co.*

**For more data insert No. 41 on postcard, p. 37.**

## Pallet Protection

A simple method of pallet protection that any user of pallets can employ is the Signode method of reinforcing pallets with steel strapping. Bands of steel strapping are tensioned over pallet top and around runners, and stapled in place. *Signode Steel Strapping Co.*

**For more data insert No. 42 on postcard, p. 37.**

## Lightweight Fork Truck

Compact design and proper distribution of weight combined with rear wheel drive allow Spacemaster fork trucks to right angle stack in narrow aisles, and pivot about a

point halfway between the two front wheels. Directionally operated controls for tilting of mast, lifting and lowering of load and traveling two speeds in each direction are foot operated. Standard capacities are 1000, 1500, and 2000 lb for loads 32, 40 and 48 in. Lifting heights on telescopic models are 130, 106 and 82 in. *Lewis-Shepard Products, Inc.*

**For more data insert No. 43 on postcard, p. 37.**

## Drill-Countersink

The Chip-Flow double-end combination drill and countersink is available in two types and a full range of sizes. The greater shear cutting action is said to allow the drill to take chips with greater efficiency and less effort. Rugged strength is assured because of the


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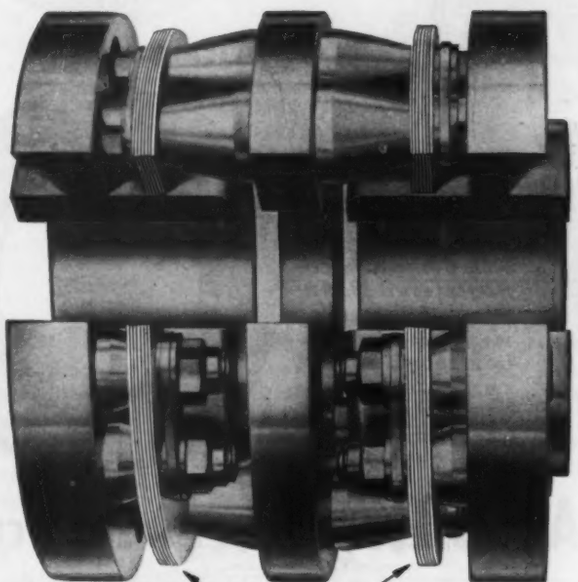

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**NO MAINTENANCE PROBLEMS.**

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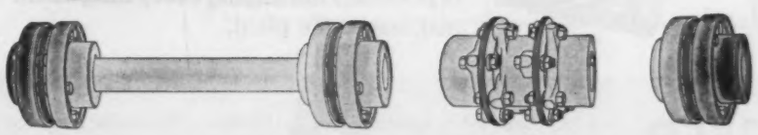
**ALL PARTS ARE SOLIDLY BOLTED TOGETHER.**



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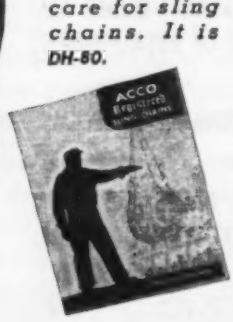
**SEND** *for this catalog which contains information on how to select, use and care for sling chains. It is* DH-80.



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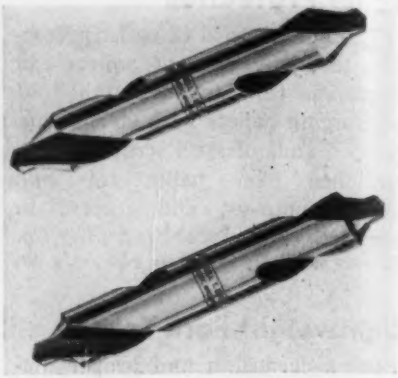
balance between a fast spiral and a heavy flute construction. One type Chip-Flow has a 60° included

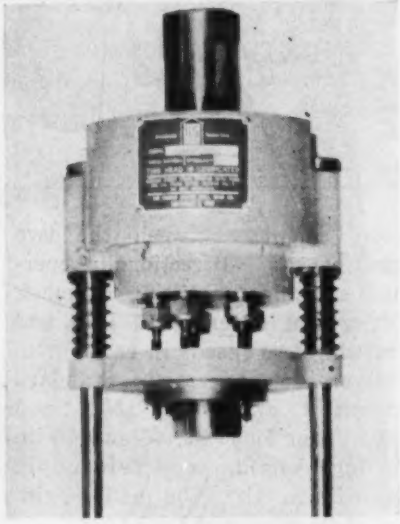


angle; the other provides 60° and 120° included angles. *Cogsdill Twist Drill Co.*

**For more data insert No. 44 on postcard, p. 37.**

## Drill Heads

Savings in operating time and cost are claimed for multiple spindle drill heads used with turret lathes. They are the fixed center distance variety. Mounted on one



or several turret faces, the drill heads accomplish the drive to the various drill spindles by using a center arbor surrounded by meshing gears. Safety factors are provided against jamming the driver and driven lugs as the turret slide sends the head into its operating position. *U. S. Drill Head Co.*

**For more data insert No. 45 on postcard, p. 37.**

***Resume Your Reading on Page 41***

# MARKET



## Briefs and Bulletins

**dead duck**—Following President Truman's veto of the so-called basing point bill, lawyers of industry believe that legal freight absorption is a dead duck for the time being. Three avenues which might lead to clearing up the situation are: the pending FTC order in the steel case; the consent order agreed to in the corn products case; and the Supreme Court decision in the Standard Oil case, held over until fall. If the tradition of taking overly long to reach decisions and enact orders follows true, the pricing muddle may face industry for a long time.

**bearing prices**—A 5 pct price advance applicable only to its spherical roller bearings, spherical roller thrust bearings, and spherical roller bearing pillow blocks was announced last week by SKF Industries, Inc., Philadelphia. Stating that the rise was made "reluctantly," SKF noted that spherical roller bearings prices have risen only 20 pct since Jan., 1941, while labor costs have doubled and virtually all material costs have shown heavy increases, ranging from 40 pct to 160 pct.

**price pondering**—An advance in the price of its alloy steels is being "seriously considered" by the Timken Roller Bearing Co. because of high-flying scrap costs and increases in other raw materials, said William E. Umstattd, president. He stated that the higher cost of producing alloy steel if continued would necessitate a rise in the price of the firm's roller bearings. Timken is at "the point of either operating without a profit or passing along" increased costs, he said.

**tote that bale**—With imminence of the cotton baling season, demand for strip is gaining even more momentum, while steel sheet demand in the Birmingham area continues strong. Since local mills cannot meet demand, a considerable tonnage of plate is entering the area from outside points. Pig iron demand has picked up with the conclusion of the plumbers and steamfitters strike which brought to a standstill $30 million worth of construction.

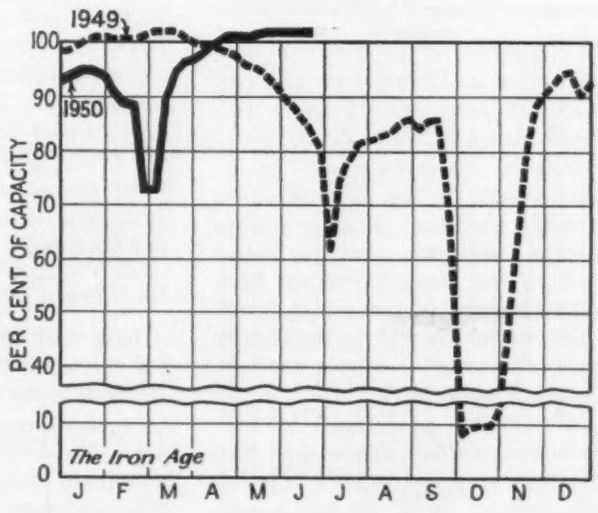
**paging Ripley**—The auto industry isn't satisfied with turning out vehicles at the unprecedented rate of 10 million vehicles per year. At least two of the independents are planning substantial boosts in output. One of them is now hiring for a second shift. The other hopes to boost output 35 pct but has to find more steel before it can do so.

**building bandwagon**—The Borden Metal Products Co., Elizabeth, N. J., will build a $250,000 steel fabricating plant at Leeds, Ala., a few miles from Birmingham. Operations are expected to start on Jan. 1, 1951. Construction steel will be supplied by the Tennessee Coal, Iron & Railroad Co. Borden makes steel floor gratings and safety steps.

**rise and effect**—Because of a 15 pct rise in copper, and other cost increases elsewhere, Westinghouse Electric Corp. announced that distribution transformer prices have been restored essentially to the level of March, '49, time of a 10 pct reduction. The new prices were effective midnight, June 16, but orders shipped within 90 days which were booked prior to this change will not be affected.

**price advance**—Due to recent advances in the price of zinc, Wheeling Steel Corp.'s Wheeling Corrugated Co. has increased prices of its galvanized ware an average of 7.5 pct, effective June 19. Galvanized ware accounts for about 15 pct of Wheeling Steel's total production.

### Steel Operations




### District Operating Rates—Per Cent of Capacity

| Week of | Pittsburgh | Chicago | Youngstown | Philadelphia | Cleveland | Buffalo | Wheeling | South | Detroit | West | Ohio River | St. Louis | East | Aggregate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| June 11 | 104.0* | 103.0* | 94.0 | 88.0 | 97.5* | 104.0 | 108.0 | 104.0 | 109.0* | 102.7 | 87.5* | 91.0 | 100.0 | 101.5 |
| June 18 | 103.0 | 104.0 | 93.0 | 88.0 | 97.5 | 104.0 | 104.0 | 104.0 | 107.0 | 110.2 | 88.0 | 90.9 | 112.0 | 101.5 |

* Revised.

# Nonferrous Metals OUTLOOK

## Market Activities

**Metal prices hold steady . . . Premiums paid for copper scrap . . . Lead market shows some weakness . . . Chase Brass settles at Waterbury and Cleveland.**

by JOHN ANTHONY

**New York**—Aside from the 15¢ per lb increase in cadmium on June 15, there was a pause in the upward movement of prices last week, but the underlying strength in the copper and zinc markets was still present. The lead market appeared to be weaker, as indicated by lower export prices and by a rise in the battery smelting charge at Philadelphia.

### Markets Strong

The strike at the copper mining operation at Chiquicamata, Chile, had not been settled early this week. And the Rosita Zinc Smelter strike in Mexico was still in effect. There is the promise of an overall shortage of zinc ore to plague consumers in the latter part of the year. There has been no settlement of the copper tariff dilemma which will automatically raise the price of copper to U. S. industry by 2¢ a lb.

Now that it is virtually too late to take any effect, the case of fabricators and consumers against the copper tariff is being presented by more of the independent fabricators. There is some talk in the industry that the tariff suspension measure should be made retroactive to June 30. If this could be worked out, consumers might be in a position to protect themselves. But the practical difficulties of such a measure would be very great.

Refiners raised their buying prices for copper and brass by another 4¢ last week, making No. 1 heavy copper 19½¢. And there are new reports of scrap buying at premiums as high as ¾¢. Refiners report that scrap is not moving freely. But the competition for it by means of higher prices is a sure road to a higher price copper market.

### No Upward Move

Last week the price of Joplin 60 pct zinc concentrates remained unchanged at $95 a ton. So there was no upward move in the zinc market. Potential competition by aluminum sheets and die castings will encourage the zinc industry to try to hold the line at the 15¢ price. But the price may be forced up again in the next few weeks by the current heavy rate of demand.

Stockpiling policies are having a very important effect on the fluctuations of the markets. The continued buying of copper and zinc by the munitions board despite unprecedented industrial demand has certainly been partly responsible for the price rises.

### Lead Market Weak

Weakness developed in the lead market almost as soon as it was learned that the government buying would be curtailed at the end of this month. The first evidence of this was when the export price dropped to 11¢ gulf ports. Early this week the smelting charge was advanced in at least one market, indicating further weakness in lead.

Chase Brass & Copper Co. tentatively reached a 2 year contract with the CIO Progressive Metalworkers Council for its Waterbury plants. The package, at a cost of about 8¢ per hr, provides for social insurance but no pension, it is reported. The company had just previously concluded a 1 yr agreement with the International Assn. of Machinists for its Cleveland plant on the basis of a 5¢ an hr wage increase, plus half the cost of insurance.

### NONFERROUS METALS PRICES

| | June 14 | June 15 | June 16 | June 17 | June 19 | June 20 |
|---|---|---|---|---|---|---|
| Copper, electro, Conn. | 22.50 | 22.50 | 22.50 | 22.50 | 22.50 | 22.50 |
| Copper, Lake, Conn. | 22.625 | 22.625 | 22.625 | 22.625 | 22.625 | 22.625 |
| Tin, Straits, New York | 78.00 | 77.25 | 77.25 | .... | 77.00 | *76.875 |
| Zinc, East St. Louis | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 |
| Lead, St. Louis | 11.80 | 11.80 | 11.80 | 11.80 | 11.80 | 11.80 |

Note: Quotations are going prices.
*Tentative.

## MILL PRODUCTS

### Aluminum

*(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)*

**Flat Sheet:** 0.188 in., 2S, 3S, 27.4¢; 4S, 61S-O, 29.3¢; 52S, 31.4¢; 24S-O, 24S-OAL, 30.3¢; 75S-O, 75S-OAL, 36.8¢; 0.081 in., 2S, 3S, 28.4¢; 4S, 61S-O, 30.7¢; 52S, 32.8¢; 24S-O, 24S-OAL, 31.4¢; 75S-O, 75S-OAL, 38.5¢; 0.032 in., 2S, 3S, 30.0¢; 4S, 61S-O, 34.0¢; 52S 36.7¢ 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 48.1¢.

**Plate:** ¼ in., and heavier: 2S, 3S, F, 24.8¢ 4S-F, 27¢; 52S-F, 28.1¢; 61S-O, 27.6¢; 24S-F, 24S-FAL, 28.1¢; 75S-F, 75S-FAL, 34.9¢.

**Extruded Solid Shapes:** Shape factors 1 to 4, 33.6¢ to 67¢; 11 to 13, 34.3¢ to 79¢; 23 to 25, 36.3¢ to $1.08; 35 to 37, 43.3¢ to $1.66.

**Rod, Rolled:** 1.5 to 4.5 in., 2S-F, 3S-F, 34.5¢ to 31¢; Cold-finished, 0.375 to 3 in., 2S, 3S, 37¢ to 32.5¢.

**Screw Machine Stock:** Rounds, 11S-T3, R317-T4, ⅛ to 11/32 in., 49.5¢ to 38.5¢; ⅜ to 1½ in., 88¢ to 36¢; 1 9/16 to 3 in., 36¢ to 33¢; 17S-T4 lower by 1¢ per lb. Base 5000 lb.

**Drawn Wire:** Coiled, 0.051 to 0.374 in.; 2S, 36.5¢ to 27¢; 52S, 44.5¢ to 32.5¢; 56S, 47.5¢ to 39¢; 17S-T4, 50.5¢ to 35¢; 61S-T4, 45¢ to 34.5¢; 75S-T-6, 76.5¢ to 55.5¢.

**Extruded Tubing, Rounds:** 63S-T5; OD in in.: 1¼ to 2, 33.5¢ to 49¢; 2 to 4, 30.5¢ to 41.3¢; 4 to 6, 31¢ to 37.8¢; 6 to 9, 31.5¢ to 39.3¢.

**Roofing Sheet, Flat:** 0.019 in. x 28 in, per sheet, 72 in., $1.008; 96 in., $1.344; 120 in., $1.679; 144 in., $2.017. Gage 0.024 in. x 28 in., 72 in., $1.224; 96 in., $1.633; 120 in., $2.042; 144 in., $2.451. **Coiled Sheet:** 0.019 in. x 28 in., 24.7¢ per lb; 0.024 in. x 28 in., 23.7¢ per lb.

### Magnesium

*(Cents per lb, f.o.b. mill, freight allowed)*

**Sheets and Plate: Ma, FSa,** ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher. Base: 30,000 lb.

**Extruded Round Rod:** M, diam in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher. Base: Up to ¾ in. diam., 10,000 lb; ¾ in. to 1¾ in., 20,000 lb; 1¾ in. and larger, 30,000 lb.

**Extruded Solid Shapes, Rectangle:** M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb per ft, per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ lb to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

**Extruded Round Tubing:** M, wall thickness, outside diam. in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢; 0.065 to 0.082, ⅜ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢; 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher. Base, OD in in.: Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

### Nickel and Monel

*(Base prices, cents per lb, f.o.b. mill)*

| | "A" Nickel | Monel |
|---|---|---|
| Sheets, cold-rolled | 69 | 53 |
| Strip, cold-rolled | 75 | 56 |
| Rods and bars | 65 | 51 |
| Angles, hot-rolled | 65 | 51 |
| Plates | 67 | 52 |
| Seamless tubes | 98 | 86 |
| Shot and blocks | .. | 46 |

### Copper, Brass, Bronze

*(Cents per lb, freight prepaid on 200 lb)*

| | Sheets | Rods | Extruded Shapes |
|---|---|---|---|
| Copper | 35.43 | .... | 35.03 |
| Copper, h-r | .... | 31.28 | .... |
| Copper, drawn | .... | 32.53 | .... |
| Low brass | 33.42 | 33.11 | .... |
| Yellow brass | 32.03 | 31.72 | .... |
| Red brass | 33.89 | 33.58 | .... |
| Naval brass | 36.71 | 30.77 | †2.03 |
| Leaded brass | .... | 26.43 | 30.49 |
| Com'l bronze | 34.88 | 34.57 | .... |
| Manganese bronze | 40.21 | 34.10 | 35.66 |
| Phosphor bronze | 53.17 | 53.42 | .... |
| Muntz metal | 34.93 | 30.49 | 31.74 |
| Everdur, Herculoy, Olympic, etc. | 40.14 | 39.08 | .... |
| Nickel silver 10 pct | 42.77 | 46.63 | 49.71 |
| Arch. bronze | .... | .... | 30.49 |

## PRIMARY METALS

*(Cents per lb, unless otherwise noted)*

| | |
|---|---|
| Aluminum ingot, 99+%, 10,000 lb, freight allowed | 17.50 |
| Aluminum pig | 16.50 |
| Antimony, American, Laredo, Tex. | 24.50 |
| Beryllium copper, 3.75-4.25% Be dollars per lb contained Be | $24.50 |
| Beryllium aluminum 5% Be, dollars per lb contained Be | $56.00 |
| Bismuth, ton lots | $2.00 |
| Cadmium, del'd | $2.15 |
| Cobalt, 97-99% (per lb) | $1.80 to $1.87 |
| Copper, electro, Conn. Valley | 22.50 |
| Copper, Lake, Conn. Valley | 22.625 |
| Gold, U. S. Treas., dollars per oz. | $35.00 |
| Indium, 99.8%, dollars per troy oz. | $2.25 |
| Iridium, dollars per troy oz. | $100 to $110 |
| Lead, St. Louis | 11.80 |
| Lead, New York | 12.00 |
| Magnesium, 99.8+%, f.o.b. Freeport Tex., 10,000 lb | 21.50 |
| Magnesium, sticks, 100 to 500 lb | 37.50¢ to 39.50¢ |
| Mercury, dollars per 76-lb flask f.o.b. New York | $70 to $71 |
| Nickel, electro, f.o.b. New York | 51.22 |
| Nickel oxide sinter, f.o.b. Copper Cliff, Ont., contained nickel | 44.25 |
| Palladium, dollars per troy oz. | $24.00 |
| Platinum, dollars per troy oz. | $66 to $69 |
| Silver, New York, cents per oz. | 72.75 |
| Tin, New York | 76.875 |
| Zinc, East St. Louis | 15.00 |
| Zinc, New York | 15.72 |
| Zirconium copper, 50 pct | $6.20 |

## REMELTED METALS

### Brass Ingot

*(Cents per lb delivered, carloads)*

| | |
|---|---|
| 85-5-5-5 ingot | |
| No. 115 | 21.75-22.00 |
| No. 120 | 21.25-21.50 |
| No. 123 | 20.75-21.00 |
| 80-10-10 ingot | |
| No. 305 | 25.50 |
| No. 315 | 23.50 |
| 88-10-2 ingot | |
| No. 210 | 31.50 |
| No. 215 | 29.00 |
| No. 245 | 23.75-24.75 |
| Yellow ingot | |
| No. 405 | 18.25-19.00 |
| Manganese bronze | |
| No. 421 | 23.50 |

### Aluminum Ingot

*(Cents per lb, of 30,000 lb)*

| | |
|---|---|
| 95-5 aluminum-silicon alloys | |
| 0.30 copper, max. | 20.00-20.25 |
| 0.60 copper, max. | 19.75-20.25 |
| Piston alloys (No. 122 type) | 18.50-19.00 |
| No. 12 alum. (No. 2 grade) | 17.75-18.25 |
| 108 alloy | 18.50-19.00 |
| 195 alloy | 19.50-20.00 |
| 13 alloy | 20.00-20.25 |
| AXS-679 | 18.50-19.00 |

Steel deoxidizing aluminum, notch-bar granulated or shot

| | |
|---|---|
| Grade 1—95-97½% | 19.25-19.50 |
| Grade 2—92-95% | 18.25-18.50 |
| Grade 3—90-92% | 17.25-17.50 |
| Grade 4—85-90% | 16.75-17.00 |

## ELECTROPLATING SUPPLIES

### *Anodes*

*(Cents per lb, freight allowed, in 500 lb lots)*

| | |
|---|---|
| Copper | |
| Cast, oval, 15 in. or longer | 39⅛ |
| Electrodeposited | 33⅜ |
| Rolled, oval, straight, delivered | 36.59 |
| Forged ball anodes | 41 |
| Brass, 80-20 | |
| Cast, oval, 15 in. or longer | 32¾ |
| Zinc, oval | 22½ |
| Ball anodes | 21½ |
| Nickel 99 pct plus | |
| Cast | 68.00 |
| Rolled, depolarized | 69.00 |
| Cadmium | $2.30 |
| Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn. | 79½ |

### *Chemicals*

*(Cents per lb, f.o.b. shipping point)*

| | |
|---|---|
| Copper cyanide, 100 lb drum | 49¼ |
| Copper sulfate, 99.5 crystals, bbl. | 10⅝ |
| Nickel salts, single or double, 4-100 lb bags, frt allowed | 20½ |
| Nickel chloride, 375 lb drum | 27½ |
| Silver cyanide, 100 oz lots, per oz. | 61¼ |
| Sodium cyanide, 96 pct domestic 200 lb drums | 19.25 |
| Zinc sulfate, 89 pct granular | 7.15 |
| Zinc cyanide, 100 lb drums | 43¾ |

## SCRAP METALS

### Brass Mill Scrap

*(Cents per pound; add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)*

| | Heavy | Turnings |
|---|---|---|
| Copper | 17½ | 16¾ |
| Yellow brass | 14⅝ | 13⅝ |
| Red brass | 16 | 15¼ |
| Commercial bronze | 16⅜ | 15⅝ |
| Manganese bronze | 13⅞ | 13 |
| Leaded brass rod ends | 14⅝ | .... |

### Custom Smelters' Scrap

*(Cents per pound, carload lots, delivered to refinery)*

| | |
|---|---|
| No. 1 copper wire | 19.25 |
| No. 2 copper wire | 18.25 |
| Light copper | 17.25 |
| Refinery brass | 17.50* |
| Radiators | 13.25 |

*Dry copper content.

### Ingot Makers' Scrap

*(Cents per pound, carload lots, delivered to producer)*

| | |
|---|---|
| No. 1 copper wire | 19.25 |
| No. 2 copper wire | 18.25 |
| Light copper | 17.25 |
| No. 1 composition | 16.50 |
| No. 1 comp turnings | 16.00 |
| Rolled brass | 13.50 |
| Brass pipe | 15.00 |
| Radiators | 13.50 |
| Heavy yellow brass | 12.50 |
| *Aluminum* | |
| Mixed old cast | 10.00-10.25 |
| Mixed old clips | 10.75-11.00 |
| Mixed turnings, dry | 10.00-10.25 |
| Pots and pans | 10.00-10.25 |
| Low copper | 11.75-12.00 |

### Dealers' Scrap

*(Dealers' buying prices, f.o.b. New York in cents per pound)*

#### Copper and Brass

| | |
|---|---|
| No. 1 heavy copper and wire | 17 —17¼ |
| No. 2 heavy copper and wire | 16 —16¼ |
| Light copper | 15 —15¼ |
| Auto radiators (unsweated) | 11¼—11½ |
| No. 1 composition | 14½—14¾ |
| No. 1 composition turnings | 14 —14¼ |
| Clean red car boxes | 12¾—13 |
| Cocks and faucets | 12¾—13 |
| Mixed heavy yellow brass | 10 —10¼ |
| Old rolled brass | 11 —11¼ |
| Brass pipe | 13 —13¼ |
| New soft brass clippings | 14⅝—15 |
| Brass rod ends | 12¾—13 |
| No. 1 brass rod turnings | 12½—12¾ |

#### Aluminum

| | |
|---|---|
| Alum. pistons and struts | 6 — 6½ |
| Aluminum crankcases | 8½— 9 |
| 2S aluminum clippings | 11½—12 |
| Old sheet and utensils | 8½— 9 |
| Borings and turnings | 5½ |
| Misc. cast aluminum | 8½— 9 |
| Dural clips (24S) | 8½— 9 |

#### Zinc

| | |
|---|---|
| New zinc clippings | 10 —10¼ |
| Old zinc | 7¾— 8 |
| Zinc routings | 5¼— 5½ |
| Old die cast scrap | 5½— 5¾ |

#### Nickel and Monel

| | |
|---|---|
| Pure nickel clippings | 36 —39 |
| Clean nickel turnings | 32 —35 |
| Nickel anodes | 36 —39 |
| Nickel rod ends | 36 —39 |
| New Monel clippings | 15 —19 |
| Clean Monel turnings | 10 —14 |
| Old sheet Monel | 14 —18 |
| Inconel clippings | 20 —24 |
| Nickel silver clippings, mixed | 9 —10 |
| Nickel silver turnings, mixed | 6 — 7 |

#### Lead

| | |
|---|---|
| Soft scrap, lead | 9¾—10 |
| Battery plates (dry) | 5 — 5¼ |

#### Magnesium

| | |
|---|---|
| Segregated solids | 9 —10 |
| Castings | 5½— 6½ |

#### Miscellaneous

| | |
|---|---|
| Block tin | 62 —64 |
| No. 1 pewter | 41 —43 |
| No. 1 auto babbitt | 37 —39 |
| Mixed common babbitt | 9¾—10 |
| Solder joints | 12½—13 |
| Siphon tops | 37 —39 |
| Small foundry type | 13 —13½ |
| Monotype | 11½—12 |
| Lino. and stereotype | 11 —11½ |
| Electrotype | 9¾—10 |
| New type shell cuttings | 15 —15¼ |
| Hand picked type shells | 6½— 7 |
| Lino. and stereo. dross | 4¼— 4¾ |
| Electro. dross | 2¾— 3 |

MARKETS—PRICES—TRENDS

# SCRAP
## *Iron & Steel*

## Prices Steadier, Buyers Continue to Wait

The dullness injected into the scrap market after its wild surging has continued to this week with very little new buying going on in most markets. The underlying demand for steel, however, is keeping prices from falling far.

Prices on No. 1 heavy melting steel ranged from unchanged to down $2.00 per gross ton and in many markets there was a lessening of the spread between No. 1 and No. 2 grades.

There was a slight downward fluctuation in cast grades in some markets but they were generally firm. Borings ranged both upwards and downwards and chemical borings showed a noticeable strengthening in the East.

There is a lot of scrap flowing into the Pittsburgh mills this week but practically all of it is on old orders.

**PITTSBURGH** — Scrap was flowing to the mills in a veritable flood this week, virtually all of it on old orders. One mill was forced to hold up shipments due to overtaxed inspection and unloading facilities. The market held firm, however, and at least one mill buyer was inclined to believe that last week's setback was only a temporary readjustment from the all-time high of $47.00. The $47.00 price, incidentally, was based on an order for 10,000 tons. The turnings market was strong.

**CHICAGO**—No. 1 heavy melting steel is quotable at $39.00 per gross ton in the Chicago area this week. Brokers are offering dealers $2.00 to $3.00 under last week's prices. One mill in the area has stopped shipments of scrap. Most other grades were down $1.00 to $2.00 per gross ton. One major purchaser in the area was expected to come into the market early this week. Report of a sale at $39.00 early this week was not confirmed.

**PHILADELPHIA** — Even though there was no new mill buying last week, the market here was beginning to level off as brokers covered. An appraisal of the market indicates a drop of 50¢ in No. 1 melting. Other steel grades were unchanged, narrowing the unusually wide spreads. Reductions also applied to crop rails, $2.00, carwheels, $1.00, and malleable, $2.00. Chemical borings were up $3.00 on new buying. The cast market was unchanged, but there was new buying of yard cast at $35.00.

**NEW YORK**—There was little buying taking place here early this week and brokers were still waiting for prices to stabilize. Prices on the steelmaking grades remained about the same with the spread of No. 1 heavy narrowing to $32.00 to $33.00 a ton. There was also a general drop of the cast grades in sympathy with current trends in steelmaking grades.

**DETROIT**—The local scrap market is marking time this week. There is little buying and, while no sales are reported, a considerable amount of scrap is being offered at the prices quoted in THE IRON AGE, according to the trade. With the sale of new industrial lists next week it will be possible to see definitely whether or not the market here has developed a permanent weakness. Local scrap buyers are watching allocated scrap tonnages very carefully it is reported.

**CLEVELAND** — There were further downward movements of some grades here and in the Valley last week as brokers covered outstanding orders. Steel grades were down by $1.00 in both markets. Crop rails and railroad heavy melting were down $3.00 here and cast grades were down $2.00. In the Valley, turnings grades were down 50¢. There is no real pessimism in the trade, even though mills are still out of the market. The high rate of current operations is expected to force early buying.

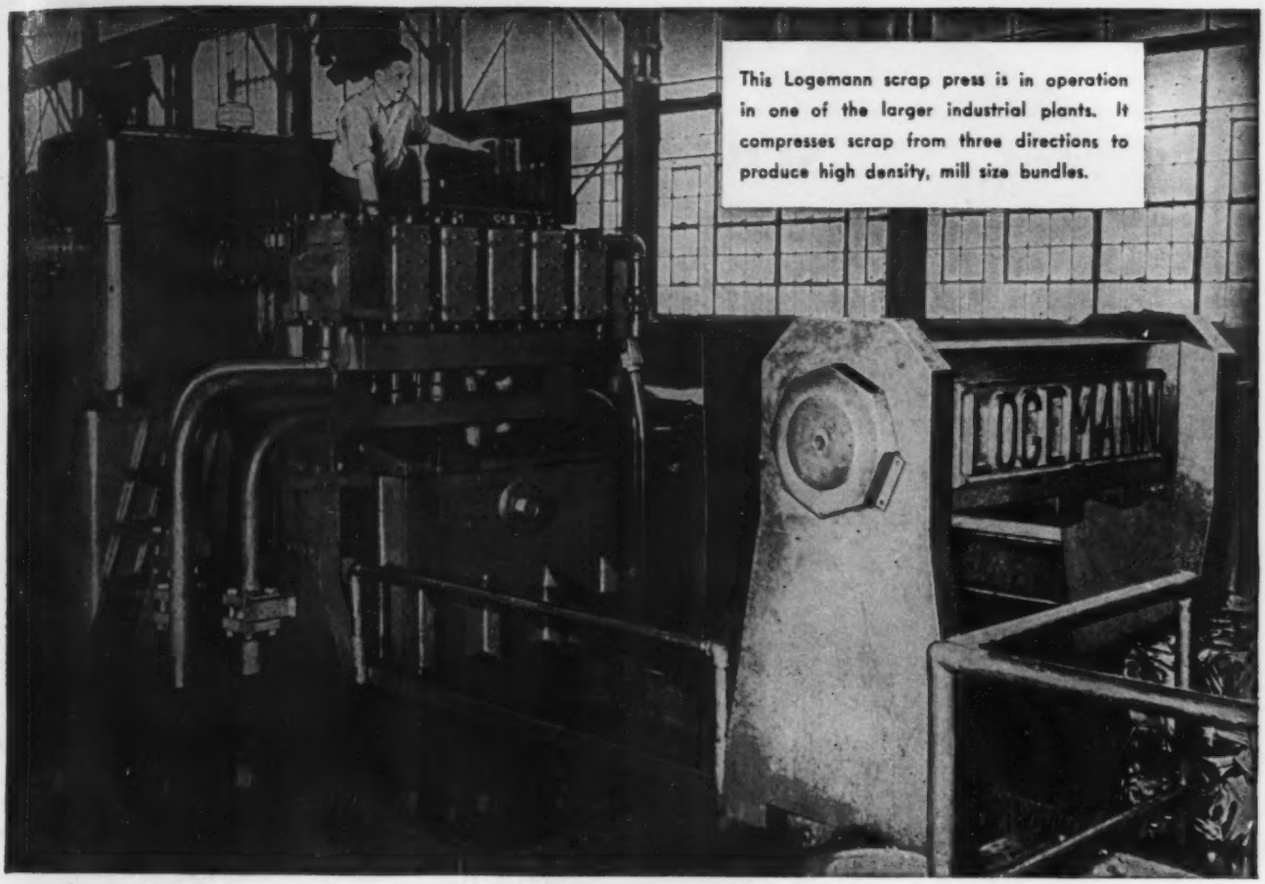
**ST. LOUIS**—The advance in scrap prices here has been halted as a result of a cutback of foundry and mill operations because of vacations and prices are unchanged. Heavy purchases within recent weeks are another reason for the lessening of consumer demand. Generally it is not expected that mills will come into the market again until July.

**CINCINNATI**—Steel grades prices were unchanged in this market last week, except for mixed bundles which were down $1.00. Readjustments occurred in foundry grades to bring them into line. Low phos is down $1.00. The Southern and L & N lists will close this week, and market observers are waiting to see what will develop. Some factors in this market are bearish in outlook, expecting further weakness in the market due to vacation closedowns of mills.

**BOSTON**—The dull trend which set into the market 2 weeks ago continued the slackened pace up to the early part of this week. There was only spasmodic activity and the No. 1 steel grades held while there was a drop in No. 2 grades. No. 2 cast was up $1.50 to $28.00 to $29.00 per gross ton.

**BIRMINGHAM**—No new orders are being placed for scrap but dealers are still filling orders received the early part of the month. Prices remain steady on most items, the few changes being upward. With steel mills operating at capacity they are sure to need more scrap soon and dealers do not anticipate any serious break in prices at this time.

**BUFFALO**—Prices fell $2.00 a ton on a sale of No. 1 heavy melting within a range of $39.00 to $40.00. Weaker tendencies dominate but dealers do not expect trading here to become panicky. Buying interest remains at a low ebb as leading mill consumers stay on the sidelines. Water receipts of scrap continue heavy and thus far exceed 55,000 tons.




This Logemann scrap press is in operation in one of the larger industrial plants. It compresses scrap from three directions to produce high density, mill size bundles.

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Iron and Steel

# SCRAP PRICES

**Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.**

## Pittsburgh

| | |
|---|---|
| No. 1 hvy. melting | $44.50 to $45.00 |
| No. 2 hvy. melting | 37.50 to 38.00 |
| No. 1 bundles | 44.50 to 45.00 |
| No. 2 bundles | 35.50 to 36.00 |
| Machine shop turn. | 30.50 to 31.00 |
| Mixed bor. and ms. turns. | 30.50 to 31.00 |
| Shoveling turnings | 34.50 to 35.00 |
| Cast iron borings | 33.50 to 34.00 |
| Low phos. plate | 47.00 to 47.50 |
| Heavy turnings | 39.00 to 40.00 |
| No. 1 RR. hvy. melting | 46.50 to 47.00 |
| Scrap rails, random lgth. | 44.00 to 44.50 |
| Rails 2 ft and under | 47.50 to 48.50 |
| RR. steel wheels | 49.50 to 50.00 |
| RR. spring steel | 49.50 to 50.00 |
| RR. couplers and knuckles | 49.50 to 50.00 |
| No. 1 machinery cast | 43.50 to 44.00 |
| Mixed yard cast. | 38.00 to 38.50 |
| Heavy breakable cast. | 35.00 to 36.00 |
| Malleable | 44.00 to 45.00 |

## Chicago

| | |
|---|---|
| No. 1 hvy. melting | $38.00 to $39.00 |
| No. 2 hvy. melting | 36.00 to 37.00 |
| No. 1 factory bundles | 38.00 to 39.00 |
| No. 1 dealers' bundles | 38.00 to 39.00 |
| No. 2 dealers' bundles | 33.00 to 34.00 |
| Machine shop turn. | 24.50 to 25.50 |
| Mixed bor. and turn. | 25.00 to 26.00 |
| Shoveling turnings | 26.00 to 27.00 |
| Cast iron borings | 26.00 to 27.00 |
| Low phos. forge crops | 41.00 to 42.00 |
| Low phos. plate | 39.00 to 40.00 |
| No. 1 RR. hvy. melting | 40.00 to 41.00 |
| Scrap rails, random lgth. | 44.00 to 45.00 |
| Rerolling rails | 51.00 to 52.00 |
| Rails 2 ft and under | 47.00 to 48.00 |
| Locomotive tires, cut | 44.00 to 45.00 |
| Cut bolsters & side frames | 40.00 to 41.00 |
| Angles and splice bars | 45.00 to 46.00 |
| RR. steel car axles | 57.00 to 58.00 |
| RR. couplers and knuckles | 44.50 to 45.50 |
| No. 1 machinery cast. | 46.00 to 47.00 |
| No. 1 agricul. cast. | 44.00 to 45.00 |
| Heavy breakable cast. | 38.00 to 39.00 |
| RR. grate bars | 36.00 to 37.00 |
| Cast iron brake shoes | 36.00 to 37.00 |
| Cast iron car wheels | 41.50 to 42.50 |
| Malleable | 47.00 to 48.00 |

## Philadelphia

| | |
|---|---|
| No. 1 hvy. melting | $33.50 to $34.00 |
| No. 2 hvy. melting | 30.50 to 31.50 |
| No. 1 bundles | 33.50 to 34.50 |
| No. 2 bundles | 27.00 to 28.00 |
| Machine shop turn. | 23.00 to 24.00 |
| Mixed bor. and turn. | 21.00 to 22.00 |
| Shoveling turnings | 25.00 to 26.00 |
| Low phos. punchings, plate | 37.00 to 38.00 |
| Low phos. 5 ft and under | 37.00 to 38.00 |
| Low phos. bundles | 34.00 to 35.00 |
| Hvy. axle forge turn. | 33.50 to 34.50 |
| Clean cast chem. borings | 33.00 to 34.00 |
| RR. steel wheels | 39.00 to 40.00 |
| RR. spring steel | 39.00 to 40.00 |
| Rails 18 in. and under | 41.00 to 42.00 |
| No. 1 machinery cast | 39.00 to 40.00 |
| Mixed yard cast | 34.00 to 35.00 |
| Heavy breakable cast | 35.00 to 36.00 |
| Cast iron carwheels | 40.00 to 41.00 |
| Malleable | 42.00 to 43.00 |

## Cleveland

| | |
|---|---|
| No. 1 hvy. melting | $40.50 to $41.00 |
| No. 2 hvy. melting | 35.50 to 36.00 |
| No. 1 busheling | 40.50 to 41.00 |
| No. 1 bundles | 40.50 to 41.00 |
| No. 2 bundles | 30.50 to 31.00 |
| Machine shop turn. | 25.50 to 26.00 |
| Mixed bor. and turn. | 28.50 to 29.00 |
| Shoveling turnings | 28.50 to 29.00 |
| Cast iron borings | 28.50 to 29.00 |
| Low phos. 2 ft and under | 42.50 to 43.00 |
| Steel axle turn. | 39.50 to 40.00 |
| Drop forge flashings | 40.50 to 41.00 |
| No. 1 RR. hvy. melting | 45.00 to 45.50 |
| Rails 3 ft and under | 46.00 to 47.00 |
| Rails 18 in. and under | 47.00 to 48.00 |
| No. 1 machinery cast. | 46.00 to 47.00 |
| RR. cast. | 46.00 to 47.00 |
| RR. grate bars | 34.00 to 35.00 |
| Stove plate | 38.00 to 39.00 |
| Malleable | 44.00 to 45.00 |

## Youngstown

| | |
|---|---|
| No. 1 hvy. melting | $43.00 to $43.50 |
| No. 2 hvy. melting | 38.00 to 38.50 |
| No. 1 bundles | 43.00 to 43.50 |
| No. 2 bundles | $33.50 to $34.00 |
| Machine shop turn. | 32.00 to 32.50 |
| Shoveling turnings | 34.00 to 34.50 |
| Cast iron borings | 34.00 to 34.50 |
| Low phos. plate | 45.00 to 45.50 |

## Buffalo

| | |
|---|---|
| No. 1 hvy. melting | $39.00 to $40.00 |
| No. 2 hvy. melting | 36.00 to 37.00 |
| No. 1 busheling | 36.00 to 37.00 |
| No. 1 bundles | 37.00 to 38.00 |
| No. 2 bundles | 34.00 to 35.00 |
| Machine shop turn. | 30.00 to 31.00 |
| Mixed bor. and turn. | 30.00 to 31.00 |
| Shoveling turnings | 32.00 to 33.00 |
| Cast iron borings | 30.00 to 31.00 |
| Low phos. plate | 42.00 to 43.00 |
| Scrap rails, random lgth. | 40.00 to 41.00 |
| Rails 2 ft and under | 46.00 to 48.00 |
| RR. steel wheels | 43.00 to 44.00 |
| RR. spring steel | 43.00 to 44.00 |
| RR. couplers and knuckles | 43.00 to 44.00 |
| No. 1 machinery cast. | 38.00 to 39.00 |
| No. 1 cupola cast. | 35.00 to 36.00 |
| Stove plate | 36.00 to 37.00 |
| Small Indus. malleable | 38.00 to 39.00 |

## Birmingham

| | |
|---|---|
| No. 1 hvy. melting | $31.00 to $32.00 |
| No. 2 hvy. melting | 29.00 to 30.00 |
| No. 2 bundles | 27.00 to 28.00 |
| No. 1 busheling | 29.00 to 30.00 |
| Machine shop turn. | 25.00 to 26.00 |
| Shoveling turnings | 27.00 to 28.00 |
| Cast iron borings | 24.00 to 25.00 |
| Bar crops and plate | 37.00 to 38.00 |
| Structural and plate | 36.00 to 37.00 |
| Scrap rails, random lgth. | 35.00 to 36.00 |
| Rerolling rails | 44.00 to 45.00 |
| Rails 2 ft and under | 44.00 to 45.00 |
| Angles & splice bars | 40.00 to 41.00 |
| Std. steel axles | 34.00 to 35.00 |
| No. 1 cupola cast. | 38.00 to 39.00 |
| Stove plate | 33.00 to 34.00 |
| Cast iron carwheels | 33.00 to 34.00 |

## St. Louis

| | |
|---|---|
| No. 1 hvy. melting | $38.00 to $40.00 |
| No. 2 hvy. melting | 33.00 to 34.00 |
| No. 2 bundled sheets | 33.00 to 34.00 |
| Machine shop turn. | 22.00 to 23.00 |
| Shoveling turnings | 27.00 to 29.00 |
| Rails, random lengths | 42.00 to 44.00 |
| Rails 3 ft and under | 47.00 to 49.00 |
| Locomotive tires, uncut | 42.00 to 43.00 |
| Angles and splice bars | 45.00 to 46.00 |
| Std. steel car axles | 52.00 to 53.00 |
| RR. spring steel | 45.00 to 46.00 |
| No. 1 machinery cast. | 40.00 to 42.00 |
| Hvy. breakable cast. | 37.00 to 39.00 |
| Cast iron brake shoes | 36.00 to 38.00 |
| Stove plate | 36.00 to 37.00 |
| Cast iron car wheels | 39.00 to 40.00 |
| Malleable | 44.00 to 45.00 |

## New York

**Brokers' buying prices per gross ton, on cars:**

| | |
|---|---|
| No. 1 hvy. melting | $32.00 to $33.00 |
| No. 2 hvy. melting | 27.00 to 28.00 |
| No. 2 bundles | 25.00 to 26.00 |
| Machine shop turn. | 19.00 to 20.00 |
| Mixed bor. and turn. | 19.00 to 20.00 |
| Shoveling turnings | 21.00 to 21.50 |
| Clean cast chem. bor. | 26.00 to 26.50 |
| No. 1 machinery cast. | 31.00 to 32.00 |
| Mixed yard cast. | 29.00 to 29.50 |
| Charging box cast. | 29.00 to 29.50 |
| Heavy breakable cast. | 30.00 to 30.50 |
| Unstrp. motor blocks | 22.00 to 23.00 |

## Boston

**Brokers' buying prices per gross ton, on cars:**

| | |
|---|---|
| No. 1 hvy. melting | $29.00 to 31.00 |
| No. 2 hvy. melting | 24.00 to 25.00 |
| No. 1 bundles | 29.00 to 31.00 |
| No. 2 bundles | $22.00 to $23.00 |
| Machine shop turn. | 17.50 to 18.00 |
| Mixed bor. and turn. | 17.50 to 18.00 |
| Shoveling turnings | 20.00 to 21.00 |
| No. 1 busheling | 28.00 to 29.00 |
| Clean cast chem. borings | 22.00 to 23.00 |
| No. 1 machinery cast. | 31.00 to 32.00 |
| No. 2 machinery cast | 28.00 to 29.00 |
| Heavy breakable cast. | 25.00 to 26.00 |
| Stove plate | 25.00 to 26.00 |

## Detroit

**Brokers' buying prices per gross ton, on cars:**

| | |
|---|---|
| No. 1 hvy. melting | $34.00 to $35.00 |
| No. 2 hvy. melting | 27.00 to 28.00 |
| No. 1 bundles | 39.00 to 40.00 |
| New busheling | 37.00 to 38.00 |
| Flashings | 34.00 to 35.00 |
| Machine shop turn. | 22.00 to 23.00 |
| Mixed bor. and turn. | 22.00 to 23.00 |
| Shoveling turnings | 24.00 to 25.00 |
| Cast iron borings | 24.00 to 25.00 |
| Low phos. plate | 38.00 to 39.00 |
| No. 1 cupola cast. | 40.00 to 42.00 |
| Heavy breakable cast. | 31.00 to 33.00 |
| Stove plate | 35.00 to 36.00 |
| Automotive cast. | 44.00 to 45.00 |

## Cincinnati

**Per gross ton, f.o.b. cars:**

| | |
|---|---|
| No. 1 hvy. melting | $36.50 to 37.00 |
| No. 2 hvy. melting | 31.50 to 32.00 |
| No. 1 bundles | 36.50 to 37.00 |
| No. 2 bundles, black | 30.50 to 31.00 |
| No. 2 bundles, mixed | 26.50 to 27.00 |
| Machine shop turn. | 20.50 to 21.00 |
| Mixed bor. and turn. | 20.50 to 21.00 |
| Shoveling turnings | 23.50 to 24.00 |
| Cast iron borings | 23.50 to 24.00 |
| Low phos. 18 in. under | 46.00 to 47.00 |
| Rails, random lengths | 42.00 to 43.00 |
| Rails, 18 in. and under | 49.00 to 50.00 |
| No. 1 cupola cast. | 46.00 to 47.00 |
| Hvy. breakable cast. | 38.00 to 39.00 |
| Drop broken cast. | 48.00 to 49.00 |

## San Francisco

**F.o.b. Calif. shipping point.**

| | |
|---|---|
| No. 1 hvy. melting | $22.00 |
| No. 2 hvy. melting | 20.00 |
| No. 1 bundles | 22.00 |
| No. 2 bundles | 17.00 |
| No. 3 bundles | 13.00 |
| Machine shop turn. | 9.00 |
| Elec. fur. 1 ft and under | 28.00 |
| No. 1 RR. hvy. melting | 22.00 |
| Scrap rails, random lgth. | 22.00 |
| No. 1 cupola cast. | $32.50 to 34.00 |

## Los Angeles

**F.o.b. Calif. shipping point.**

| | |
|---|---|
| No. 1 hvy. melting | $22.00 |
| No. 2 hvy. melting | 20.00 |
| No. 1 bundles | 22.00 |
| No. 2 bundles | 16.00 |
| No. 3 bundles | 13.00 |
| Mach. shop turn. | 7.50 |
| Elec. fur. 1 ft and under | 30.00 |
| No. 1 RR. hvy. melting | 22.00 |
| No. 1 cupola cast. | $37.50 to 40.50 |

## Seattle

| | |
|---|---|
| No. 1 hvy. melting | $20.00 |
| No. 2 hvy. melting | 20.00 |
| No. 1 bundles | 18.00 |
| No. 2 bundles | 18.00 |
| No. 3 bundles | 12.00 |
| Elec. fur. 1 ft and under | $29.00 to 30.00 |
| RR. hvy. melting | 21.00 |
| No. 1 cupola cast. | 30.00 to 35.00 |
| Heavy breakable cast. | 20.00 |

## Hamilton, Ont.

| | |
|---|---|
| No. 1 hvy. melting | $30.00 |
| No. 1 bundles | 30.00 |
| No. 2 bundles | 29.50 |
| Mechanical bundles | 28.00 |
| Mixed steel scrap | 26.00 |
| Mixed bor. and turn. | 23.00 |
| Rails, remelting | 30.00 |
| Rails, rerolling | 33.00 |
| Bushelings | 24.50 |
| Bush., new fact, prep'd. | 29.00 |
| Bush., new fact, unprep'd. | 23.00 |
| Short steel turnings | 23.00 |
| Cast scrap | 40.00 |

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**LEADERS IN IRON AND STEEL SCRAP SINCE 1889**

# Comparison of Prices

**Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.**

| Flat-Rolled Steel: (cents per pound) | June 20, 1950 | June 13, 1950 | May 23, 1950 | June 21, 1949 |
|---|---|---|---|---|
| Hot-rolled sheets | 3.35 | 3.35 | 3.35 | 3.25 |
| Cold-rolled sheets | 4.10 | 4.10 | 4.10 | 4.00 |
| Galvanized sheets (10 ga) | 4.40 | 4.40 | 4.40 | 4.40 |
| Hot-rolled strip | 3.25 | 3.25 | 3.25 | 3.25 |
| Cold-rolled strip | 4.21 | 4.21 | 4.21 | 4.038 |
| Plate | 3.50 | 3.50 | 3.50 | 3.40 |
| Plates wrought iron | 7.85 | 7.85 | 7.85 | 7.85 |
| Stains C-R strip (No. 302) | 33.00 | 33.00 | 33.00 | 33.25 |
| **Tin and Terneplate:** (dollars per base box) | | | | |
| Tinplate (1.50 lb) cokes. | $7.50 | $7.50 | $7.50 | $7.75 |
| Tinplate, electro (0.50 lb) | 6.60 | 6.60 | 6.60 | 6.70 |
| Special coated mfg. ternes | 6.35 | 6.35 | 6.35 | 6.65 |
| **Bars and Shapes:** (cents per pound) | | | | |
| Merchant bars | 3.45 | 3.45 | 3.45 | 3.35 |
| Cold-finished bars | 4.145 | 4.145 | 4.145 | 3.995 |
| Alloy bars | 3.95 | 3.95 | 3.95 | 3.75 |
| Structural shapes | 3.40 | 3.40 | 3.40 | 3.25 |
| Stainless bars (No. 302) | 28.50 | 28.50 | 28.50 | 28.50 |
| Wrought iron bars | 9.50 | 3.50 | 9.50 | 9.50 |
| **Wire:** (cents per pound) | | | | |
| Bright wire | 4.50 | 4.50 | 4.50 | 4.15 |
| **Rails:** (dollars per 100 lb) | | | | |
| Heavy rails | $3.40 | $3.40 | $3.40 | $3.20 |
| Light rails | 3.75 | 3.75 | 3.75 | 3.55 |
| **Semifinished Steel:** (dollars per net ton) | | | | |
| Rerolling billets | $54.00 | $54.00 | $54.00 | $52.00 |
| Slabs, rerolling | 54.00 | 54.00 | 54.00 | 52.00 |
| Forging billets | 63.00 | 63.00 | 63.00 | 61.00 |
| Alloy blooms, billets, slabs | 66.00 | 66.00 | 66.00 | 63.00 |
| **Wire Rod and Skelp:** (cents per pound) | | | | |
| Wire rods | 3.85 | 3.85 | 3.85 | 3.40 |
| Skelp | 3.15 | 3.15 | 3.15 | 3.25 |

**Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.**

| Pig Iron: (per gross ton) | June 20, 1950 | June 13, 1950 | May 23, 1950 | June 21, 1949 |
|---|---|---|---|---|
| No. 2, foundry, Phila. | $50.42 | $50.42 | $50.42 | $50.56 |
| No. 2, Valley furnace | 46.50 | 46.50 | 46.50 | 46.50 |
| No. 2, Southern Cin'ti | 49.08 | 49.08 | 49.08 | 45.47 |
| No. 2, Birmingham | 42.38 | 42.38 | 42.38 | 39.38 |
| No. 2, foundry, Chicago† | 46.50 | 46.50 | 46.50 | 46.50 |
| Basic del'd Philadelphia | 49.92 | 49.92 | 49.92 | 49.74 |
| Basic, Valley furnace | 46.00 | 46.00 | 46.00 | 46.00 |
| Malleable, Chicago† | 46.50 | 46.50 | 46.50 | 46.50 |
| Malleable, Valley | 46.50 | 46.50 | 46.50 | 46.50 |
| Charcoal, Chicago | 68.56 | 68.56 | 68.56 | 73.78 |
| Ferromanganese‡ | 173.40 | 173.40 | 173.40 | 173.40 |

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.

| Scrap: (per gross ton) | | | | |
|---|---|---|---|---|
| Heavy melt'g steel, P'gh. | $44.75 | $44.75 | $38.75 | $21.50 |
| Heavy melt'g steel, Phila. | *33.75* | 34.50 | 29.00 | 18.50 |
| Heavy melt'g steel, Ch'go | *38.50* | 39.50 | 34.75 | 20.75 |
| No. 1 hy. com. sh't, Det. | 39.50 | 39.50 | 36.25 | 14.75 |
| Low phos. Young'n | 45.25 | 45.25 | 39.75 | 22.25 |
| No. 1 cast, Pittsburgh | 43.75 | 43.75 | 42.00 | 26.50 |
| No. 1 cast, Philadelphia | 39.50 | 39.50 | 38.50 | 27.50 |
| No. 1 cast, Chicago | *46.50* | 48.50 | 47.50 | 28.88 |
| **Coke: Connellsville:** (per net ton at oven) | | | | |
| Furnace coke, prompt | $14.25 | $14.25 | $14.25 | $14.25 |
| Foundry coke, prompt | 16.25 | 16.25 | 16.25 | 16.25 |
| **Nonferrous Metals:** (cents per pound to large buyers) | | | | |
| Copper, electro, Conn. | 22.50 | 22.50 | 20.50 | 16.00 |
| Copper, Lake, Conn. | 22.625 | 22.625 | 20.625 | 18.625 |
| Tin, Straits, New York | *76.875*† | 77.625* | 76.50 | $1.03 |
| Zinc, East St. Louis | 15.00 | 15.00 | 12.00 | 9.00 |
| Lead, St. Louis | 11.80 | 11.80 | 11.80 | 11.85 |
| Aluminum, virgin | 17.50 | 17.50 | 17.50 | 17.00 |
| Nickel, electrolytic | 51.22 | 51.22 | 42.97 | 42.93 |
| Magnesium, ingot | 21.50 | 21.50 | 20.50 | 20.50 |
| Antimony, Laredo, Tex. | 24.50 | 24.50 | 24.50 | 38.50 |

†Tentative. *Revised.

# Composite Prices

**Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)**

| | Finished Steel Base Price | Pig Iron | Scrap Steel |
|---|---|---|---|
| June 20, 1950 | 3.837¢ per lb. | $46.38 per gross ton | *$39.00* per gross ton |
| One week ago | 3.837¢ per lb. | 46.38 per gross ton | 39.58 per gross ton |
| One month ago | 3.837¢ per lb. | 46.38 per gross ton | 34.17 per gross ton |
| One year ago | 3.705¢ per lb. | 45.91 per gross ton | 20.25 per gross ton |

| | Finished Steel Base Price High | Finished Steel Base Price Low | Pig Iron High | Pig Iron Low | Scrap Steel High | Scrap Steel Low |
|---|---|---|---|---|---|---|
| 1950 | 3.837¢ Jan. 3 | 3.837¢ Jan. 3 | $46.38 Feb. 7 | $45.88 Jan. 3 | $40.92 June 6 | $26.25 Jan. 3 |
| 1949 | 3.837¢ Dec. 27 | 3.3705¢ May 3 | 46.87 Jan. 18 | 45.88 Sept. 6 | 43.00 Jan. 4 | 19.33 June 28 |
| 1948 | 3.721¢ July 27 | 3.193¢ Jan. 1 | 46.91 Oct. 12 | 39.58 Jan. 6 | 43.16 July 27 | 39.75 Mar. 9 |
| 1947 | 3.193¢ July 29 | 2.848¢ Jan. 1 | 37.98 Dec. 30 | 30.14 Jan. 7 | 42.58 Oct. 28 | 29.50 May 20 |
| 1946 | 2.848¢ Dec. 31 | 2.464¢ Jan. 1 | 30.14 Dec. 10 | 25.37 Jan. 1 | 31.17 Dec. 24 | 19.17 Jan. 1 |
| 1945 | 2.464¢ May 29 | 2.396¢ Jan. 1 | 25.37 Oct. 23 | 23.61 Jan. 2 | 19.17 Jan. 2 | 18.92 May 22 |
| 1944 | 2.396¢ | 2.396¢ | $23.61 | $23.61 | 19.17 Jan. 11 | 15.76 Oct. 24 |
| 1943 | 2.396¢ | 2.396¢ | 23.61 | 23.61 | $19.17 | $19.17 |
| 1942 | 2.396¢ | 2.396¢ | 23.61 | 23.61 | 19.17 | 19.17 |
| 1941 | 2.396¢ | 2.396¢ | $23.61 Mar. 20 | $23.45 Jan. 2 | $22.00 Jan. 7 | $19.17 Apr. 10 |
| 1940 | 2.30467¢ Jan. 2 | 2.24107¢ Apr. 16 | 23.45 Dec. 23 | 22.61 Jan. 2 | 21.83 Dec. 30 | 16.04 Apr. 9 |
| 1939 | 2.35367¢ Jan. 3 | 2.26689¢ May 16 | 22.61 Sept. 19 | 20.61 Sept. 12 | 22.50 Oct. 3 | 14.08 May 16 |
| 1938 | 2.58414¢ Jan. 4 | 2.27207¢ Oct. 18 | 23.25 June 21 | 19.61 July 6 | 15.00 Nov. 22 | 11.00 June 7 |
| 1937 | 2.58414¢ Mar. 9 | 2.32263¢ Jan. 4 | 32.25 Mar. 9 | 20.25 Feb. 16 | 21.92 Mar. 30 | 12.67 June 9 |
| 1936 | 2.32263¢ Dec. 28 | 2.05200¢ Mar. 10 | 19.74 Nov. 24 | 18.73 Aug. 11 | 17.75 Dec. 21 | 12.67 June 8 |
| 1935 | 2.07542¢ Oct. 1 | 2.06492¢ Jan. 8 | 18.84 Nov. 5 | 17.83 May 14 | 13.42 Dec. 10 | 10.33 Apr. 29 |
| 1932 | 1.89196¢ July 5 | 1.83910¢ Mar. 1 | 14.81 Jan. 5 | 13.56 Dec. 6 | 8.50 Jan. 12 | 6.43 July 5 |
| 1929 | 2.31773¢ May 28 | 2.26498¢ Oct. 29 | 18.71 May 14 | 18.21 Dec. 17 | 17.58 Jan. 29 | 14.08 Dec. 8 |

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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# STEEL PRICES

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

| | Pittsburgh | Chicago | Gary | Cleveland | Canton Massillon | Middletown | Youngstown | Bethlehem | Buffalo | Conshohocken | Johnstown | Sparrows Point | Granite City | Detroit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **INGOTS** Carbon forging, net ton | $50.00 1 | | | | | | | | | | | | | $50.00 31 |
| Alloy, net ton | $51.00 1.17 | | | | | | | | | | | | | $51.00 31 |
| **BILLETS, BLOOMS, SLABS** Carbon, rerolling, net ton | $53.00 1 | $53.00 1 | $53.00 1 | | | | $57.00 13 | | $53.00 3 | $58.00 26 | $53.00 3 | | | |
| Carbon forging billets, net ton | $63.00 1 | $63.00 1.4 | $63.00 1.8 | $63.00 4 | | | $63.00 25 | | $63.00 3.4 | $65.00 26 | $63.00 3 | | | $66.00 31 |
| Alloy, net ton | $66.00 1.17 | $66.00 1.4 | $66.00 1 | | $66.00 4.42 | | $66.00 13 | $66.00 3 | $66.00 3.4 | $68.00 26 | $66.00 3 | | | $66.00 31 |
| **PIPE SKELP** | 3.15 1 | | | | | | 3.15 1.4 | | | | | | | |
| **WIRE RODS** | 3.85 2.18 | 3.85 2.4.33 | 3.85 6 | 3.85 2 | | | 3.85 6 | | | | 3.85 3 | 3.95 3 | | |
| **SHEETS** Hot-rolled (18 ga. & hvr.) | 3.35 1.5.9.15 | 3.35 23 | 3.35 1.6.8 | 3.35 4.5 | | | 3.35 1.4.6 13 3.50 | | 3.35 3 | 3.45 26 | | 3.35 3 | | 3.55 12 67 4.15 |
| Cold-rolled 4 | 10 1.5.7.9.15 5.10 63 | | 4.10 1.6.8 | 4.10 4.15 | | 4.10 7 | 4.10 4.6 | | 4.10 3 | | | 4.10 3 | 4.30 22 | 4.30 12 |
| Galvanized (10 gage) | 4.40 1.9.15 | | 4.40 1.8 | | 4.40 4 | | 4.65 64 4.75 44 | | | | | 4.40 3 | | |
| Enameling (12 gage) | 4.40 1 | | 4.40 1.8 | 4.40 4 | | 4.40 7 | 4.40 6 4.90 76 | | | | | | 4.60 22 | 4.70 12 |
| Long ternes (10 gage) | 4.80 9.15 | | 4.80 1 | | | 4.80 7 | 4.80 64 | | | | | | | |
| Hi Str. low alloy, h.r. | 5.05 1.5.9 | 5.05 1 | 5.05 1.6.8 | 5.05 4.5 | | | 5.05 1.4.6.13 | | 5.05 3 | 5.05 26 | | 5.05 3 | | 5.25 12 |
| Hi str. low alloy, c.r. | 6.20 1.5.9 | | 6.20 1.6.8 | 6.20 4.5 | | | 6.20 4.6.13 | | 6.20 3 | | | 6.20 3 | | 6.40 12 |
| Hi str. low alloy, galv. | 6.75 1 | | | | | | | | | | | 6.75 3 | | |
| **STRIP** Hot-rolled | 3.25 5.7.9.25 3.50 11 | 3.25 3.66 | 3.25 1.6.8 | 3.25 5 | | | 3.25 1.4.6 13 3.50 | | 3.25 3 | 3.35 26 | | 3.25 3 | | 3.45 12 67 4.05 |
| Cold-rolled | 4.15 5.7.9 63 4.50 | 4.30 3.66 | 4.30 8 | 4.15 2.5 | | 4.15 7 | 4.15 4.6.48.49 4.50 13.40 | | 4.15 3 | | | 4.15 3 | | 4.35 12 67 4.95 |
| Hi str. low alloy, h.r. | 4.95 9 | | 4.95 1.6.8 | 4.95 5 | | | 4.95 1.4.6.13 | | 4.95 3 | 4.95 26 | | 4.95 3 | | 5.15 12 |
| Hi Str. low alloy, c.r. | 6.20 9 | | | 6.20 2.5 | | | 6.20 4.6.13 | | 6.40 3 | | | 6.40 3 | | 6.40 12 |
| **TINPLATE†** Cokes, 1.50-lb base box 1.25 lb, deduct 20¢ | $7.50 1.5.9.15 | | $7.50 1.6.8 | | | | $7.50 4 | | | | | $7.60 3 | $7.70 22 | |
| Electrolytic 0.25, 0.50, 0.75 lb box | Deduct $1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price | | | | | | | | | | | | | |
| **BLACKPLATE, 29 gage** Hollowware enameling | 5.30 1.5.15 | | 5.30 1.6 | | | | 5.30 4 | | | | | 5.40 3 | 5.50 22 | |
| **BARS** Carbon steel | 3.45 1.5.9 | 3.45 1.4.33 | 3.45 1.6.8 | 3.45 4 | 3.45 4 | | 3.45 1.4.6 | | 3.45 3.4 | | 3.45 3 | | | 3.65 12 |
| Reinforcing‡ | 3.45 1.5 | 3.45 4 | 3.45 1.6.8 | 3.45 4 | | | 3.45 1.4.6 | | 3.45 3.4 | | 3.45 3 | 3.45 3 | | |
| Cold-finished | 4.10 58 4.15 3.4 17.52.69.71 | 4.15 3 23.69.70 | 4.15 4.73.74 | 4.15 2.61 | 4.15 4.42.82 | | 4.15 6.40.57 | | 4.15 70 | | | | | 4.35 13 4.30 64 |
| Alloy, hot-rolled | 3.95 1.17 | 3.95 1.4.33 | 3.95 1.6.8 | | 3.95 4 | | 3.95 1.6.25 | 3.95 3 | 3.95 3.4 | | 3.95 3 | | | 4.25 12 |
| Alloy, cold-drawn | 4.90 2.17.52.69.71 | 4.90 2.23.69.70 | 4.90 4.73.74 | 4.90 2.61 | 4.90 4.42.82 | | 4.90 6.25.57 | 4.90 3 | 4.90 3.70 | | | | | 5.05 64 |
| Hi str. low alloy, h.r. | 5.20 1.5 | | 5.20 1.6.8 | 5.20 4 | | | 5.20 1.6 | 5.20 3 | 5.20 3 | | 5.20 3 | | | 5.40 12 |
| **PLATE** Carbon steel | 3.50 1.5 | 3.50 1 | 3.50 1.6.8 | 3.50 4 | | | 3.50 1.12 | | 3.50 3 | 3.60 26 | 3.50 3 | 3.50 3 | | 3.75 12 |
| Floor Plates | 4.55 1 | 4.55 | 4.55 3 | 4.55 5 | | | | | | 4.55 26 | | | | |
| Alloy | 4.40 1 | 4.40 1 | 4.40 1 | | | | 4.40 13 | | | 4.40 26 | 4.40 | 4.40 3 | | |
| Hi Str. low alloy | 5.35 1.5 | 5.35 1 | 5.35 1.3 | 5.35 4.5 | | | 5.35 6 | | | 5.35 26 | 5.35 3 | 5.35 3 | | 5.60 12 |
| **SHAPES, Structural** | 3.40 1.5.9 | 3.40 1.23 | 3.40 1.6.8 | | | | | 3.45 3 | 3.45 3 | | 3.45 3 | | | |
| Hi Str. low alloy | 5.15 1.5 | 5.15 1 | 5.15 1.6.8 | | | | 5.15 6 | 5.20 3 | 5.20 3 | | 5.20 3 | | | |
| **MANUFACTURERS' WIRE** Bright | 4.50 2.5.15 | 4.50 3 4.13.33.34 | | 4.50 2.77 | | | 4.50 6 | Kokomo—4.60 39 | | | 4.50 3 | 4.60 3 | Duluth—4.50 3 Pueblo—4.75 14 | |
| **PILING, Steel Sheet** | 4.20 1.9 | 4.20 1 | | | | | | | 4.20 3 | | | | | |

# STEEL PRICES

Smaller numbers indicate producing companies. See key at right. Prices are in cents per lb unless otherwise noted. Extras apply.

| Kansas City | Houston | Birmingham | WEST COAST Seattle, San Francisco, Los Angeles, Fontana | | |
|---|---|---|---|---|---|
| | | | | | INGOTS Carbon forging, net ton |
| | $89.00 83 | | | | Alloy, net ton |
| | | $53.00 11 | F=$72.00[19] | | BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton |
| | $71.00 83 | $63.00 11 | F=$82.00[19] | Geneva=$63.00[16] | Carbon forging billets, net ton |
| | $74.00 83 | | F=$85.00[19] | | Alloy net ton |
| | | | | | PIPE SKELP |
| | 4.25 83 | 3.85 11 | SF=4.50[24] LA=4.65[24,62] | Portsmouth=3.85[20] Worcester=4.15[2] | WIRE RODS |
| | | 3.35 4,11 | SF,LA=4.05[24] F=4.25[19] | Ashland=3.35[7] Niles=3.50[64] | SHEETS Hot-rolled (18 ga. & hvr.) |
| | | 4.10 11 | SF=5.05[24] F=5.00[19] | | Cold-rolled |
| | | 4.40 4,11 | SF, LA=5.15[24] | Ashland=4.40[7] Kokomo=4.50[89] | Galvanized (10 gage) |
| | | | | | Enameling (12 gage) |
| | | | | | Long ternes (10 gage) |
| | | 5.05 11 | F=6.74[19] | | Hi Str. low alloy, h.r. |
| | | | F=7.05[19] | | Hi Str. low alloy, c.r. |
| | | | | | Hi Str. low alloy, galv. |
| 3.85 83 | 3.85 83 | 3.25 11 | SF, LA=4.00[24,62] F=4.40[19], S=4.25[62] | Ashland=3.25[7] Atlanta=3.40[65] | STRIP Hot-rolled |
| | | | F=5.40[19] LA=5.50[27] | New Haven=4.65[3,68] | Cold-rolled |
| | | 4.95 11 | F=6.84[19] | | Hi Str. low alloy, h. r. |
| | | | F=6.95[19] | | Hi Str. low alloy, c.r. |
| | | 7.60 11 | SF=8.25[24] | | TINPLATE Cokes, 1.50-lb base box 1.25 lb, deduct 20¢ |
| Deduct $1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price | | | | | Electrolytic 0.25, 0.50, 0.75 lb box |
| | | | | | BLACKPLATE, 29 gage Holloware enameling |
| 4.05 83 | 3.85 83 | 3.45 4,11 | SF, LA=4.15[24] LA=4.15[62] | Atlanta=3.60[65] | BARS Carbon steel |
| 4.05 83 | 3.85 83 | 3.45 4,11 | SF, S=4.20[62] F=4.10[19] | Atlanta=3.60[65] | Reinforcing‡ |
| | | | | Putnam, Newark=4.55[89] | Cold-finished |
| 4.55 83 | 4.35 83 | | LA=5.00[62] F=4.95[19] | | Alloy, hot-rolled |
| | | | | Newark,[89] Worcester[2]=5.20 Hartford=5.20[4] | Alloy, cold-drawn |
| | | 5.20 11 | F=6.25[19] | | Hi Str. low alloy, h.r. |
| | 3.90 83 | 3.50 4,11 | F=4.10[19] S=4.40[62] Geneva=3.50[16] | Claymont=3.60[29] Coatesville=3.60[31] Harrisburg=3.85[35] | PLATE Carbon steel |
| | | | | Harrisburg=4.55[35] | Floor plates, |
| | | | F=5.40[19] | Coatesville=4.50[31] | Alloy |
| | | 5.35 11 | F=5.95[19] | Geneva=5.35[16] | Hi Str. low alloy |
| 4.00 83 | 3.80 83 | 3.40 11 | SF=3.95[62] LA=4.00[24,62] | Phoenixville=3.30[56] Geneva=3.40[16] | SHAPES, Structural |
| | | 5.15 11 | F=4.00[19] S=4.05[62] | Fontana=5.75[19] Geneva=5.15[16] | Hi Str. low alloy |
| 5.10 83 | 4.90 83 | 4.50 4,11 | SF, LA=5.45[24,62] | Portsmouth=4.50[20] Worcester=4.80[2] | MANUFACTURERS' WIRE Bright |

Notes: †Special coated mfg ternes deduct $1.15 from 1.50-lb coke base box price. Can-making quality blackplate, 55 to 128-lb, deduct $1.90 from 1.50-lb coke base box. ‡Straight lengths only from producer to fabricator.

## KEY TO STEEL PRODUCERS

### With Principle Offices

1 Carnegie-Illinois Steel Corp., Pittsburgh
2 American Steel & Wire Co., Cleveland
3 Bethlehem Steel Co., Bethlehem
4 Republic Steel Corp., Cleveland
5 Jones & Laughlin Steel Corp., Pittsburgh
6 Youngstown Sheet & Tube Co., Youngstown
7 Armco Steel Corp., Middletown, Ohio
8 Inland Steel Co., Chicago
9 Weirton Steel Co., Weirton, W. Va.
10 National Tube Co., Pittsburgh
11 Tennessee Coal, Iron & R. R. Co., Birmingham
12 Great Lakes Steel Corp., Detroit
13 Sharon Steel Corp., Sharon, Pa.
14 Colorado Fuel & Iron Corp., Denver
15 Wheeling Steel Corp., Wheeling, W. Va.
16 Geneva Steel Co., Salt Lake City
17 Crucible Steel Co. of America, New York
18 Pittsburgh Steel Co., Pittsburgh
19 Kaiser Steel Corp., Oakland, Calif.
20 Portsmouth Div., Detroit Steel Corp., Detroit
21 Lukens Steel Co., Coatesville, Pa.
22 Granite City Steel Co., Granite City, Ill.
23 Wisconsin Steel Co., South Chicago, Ill.
24 Columbia Steel Co., San Francisco
25 Copperweld Steel Co., Glassport, Pa.
26 Alan Wood Steel Co., Conshohocken, Pa.
27 Calif. Cold Rolled Steel Corp., Los Angeles
28 Allegheny Ludlum Steel Corp., Pittsburgh
29 Worth Steel Co., Claymont, Del.
30 Continental Steel Corp., Kokomo, Ind.
31 Rotary Electric Steel Co., Detroit
32 Laclede Steel Co., St. Louis
33 Northwestern Steel & Wire Co., Sterling, Ill.
34 Keystone Steel & Wire Co., Peoria, Ill.
35 Central Iron & Steel Co., Harrisburg, Pa.
36 Carpenter Steel Co., Reading, Pa.
37 Eastern Stainless Steel Corp., Baltimore
38 Washington Steel Corp., Washington, Pa.
39 Jessop Steel Co., Washington, Pa.
40 Blair Strip Steel Co., New Castle, Pa.
41 Superior Steel Corp., Carnegie, Pa.
42 Timken Steel & Tube Div., Canton, Ohio
43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
44 Reeves Steel & Mfg. Co., Dover, Ohio
45 John A. Roebling's Sons Co., Trenton, N. J.
46 Simonds Saw & Steel Co., Fitchburg, Mass.
47 McLouth Steel Corp., Detroit
48 Cold Metal Products Co., Youngstown
49 Thomas Steel Co., Warren, Ohio
50 Wilson Steel & Wire Co., Chicago
51 Sweet's Steel Co., Williamsport, Pa.
52 Superior Drawn Steel Co., Monaca, Pa.
53 Tremont Nail Co., Wareham, Mass.
54 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
55 Ingersoll Steel Div., Chicago
56 Phoenix Iron & Steel Co., Phoenixville, Pa.
57 Fitzsimmons Steel Co., Youngstown
58 Stanley Works, New Britain, Conn.
59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
60 American Cladmetals Co., Carnegie, Pa.
61 Cuyahoga Steel & Wire Co., Cleveland
62 Bethlehem Pacific Coast Steel Corp., San Francisco
63 Follansbee Steel Corp., Pittsburgh
64 Niles Rolling Mill Co., Niles, Ohio
65 Atlantic Steel Co., Atlanta
66 Acme Steel Co., Chicago
67 Joslyn Mfg. & Supply Co., Chicago
68 Detroit Steel Corp., Detroit
69 Wyckoff Steel Co., Pittsburgh
70 Bliss & Laughlin, Inc., Harvey, Ill.
71 Columbia Steel & Shafting Co., Pittsburgh
72 Cumberland Steel Co., Cumberland, Md.
73 La Salle Steel Co., Chicago
74 Monarch Steel Co., Inc., Hammond, Ind.
75 Empire Steel Co., Mansfield, Ohio
76 Mahoning Valley Steel Co., Niles, Ohio
77 Oliver Iron & Steel Co., Pittsburgh
78 Pittsburgh Screw & Bolt Co., Pittsburgh
79 Standard Forging Corp., Chicago
80 Driver Harris Co., Harrison, N. J.
81 Detroit Tube & Steel Div., Detroit
82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
83 Sheffield Steel Corp., Kansas City
84 Plymouth Steel Co., Detroit

## STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

| Product | 301 | 302 | 303 | 304 | 316 | 321 | 347 | 410 | 416 | 430 |
|---|---|---|---|---|---|---|---|---|---|---|
| Ingots, rerolling | 12.75 | 13.50 | 15.00 | 14.50 | 22.75 | 18.25 | 20.00 | 11.25 | 13.75 | 11.50 |
| Slabs, billets, rerolling | 17.00 | 18.25 | 20.25 | 19.25 | 30.25 | 24.50 | 26.75 | 15.00 | 18.50 | 15.25 |
| Forg. discs, die blocks, rings | 30.50 | 30.50 | 33.00 | 32.00 | 49.00 | 36.50 | 41.00 | 24.50 | 25.00 | 25.00 |
| Billets, forging | 24.25 | 24.25 | 26.25 | 25.50 | 39.00 | 29.00 | 32.75 | 19.50 | 20.00 | 20.00 |
| Bars, wire, structurals | 28.50 | 28.50 | 31.00 | 30.00 | 46.00 | 34.00 | 38.50 | 23.00 | 23.50 | 23.50 |
| Plates | 32.00 | 32.00 | 34.00 | 34.00 | 50.50 | 39.50 | 44.00 | 26.00 | 26.50-27.00 | 26.50 |
| Sheets | 37.50 | 37.50 | 39.50 | 39.50 | 53.00 | 45.50 | 50.00 | 33.00 | 33.50 | 35.50 |
| Strip, hot-rolled | 24.25 | 25.75 | 30.00 | 27.75 | 46.00 | 34.50 | 38.75 | 21.25 | 28.00 | 21.75 |
| Strip, cold-rolled | 30.50 | 33.00 | 36.50 | 35.00 | 55.00 | 44.50 | 48.50 | 27.00 | 33.50 | 27.50 |

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38, 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 46.

*Strip:* Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38; W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13; Butler, Pa., 7.

*Bars:* Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.

*Wire:* Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28.

*Structurals:* Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.

*Plates:* Brackenridge, Pa., 28; Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

*Forged discs, die blocks, rings:* Pittsburgh, 1, 17; Syracuse, 17; Ferndale, Mich., 28.

*Forging billets:* Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1.

## ELECTRICAL SHEETS

*22 gage, HR cut lengths, f.o.b. mill*

| | *Cents per lb.* |
|---|---|
| Armature | 6.20 |
| Electrical | 6.70 |
| Motor | *7.95 |
| Dynamo | 8.75 |
| Transformer 72 | 9.30 |
| Transformer 65 | 9.85 |
| Transformer 58 | 10.55 |
| Transformer 52 | 11.35 |

PRODUCING POINTS—Beech Bottom, W. Va., 18; Brackenridge, Pa., 28; Follansbee, W. Va., 63; Granite City, Ill., 22*; add 0.20¢; Indiana Harbor, Ind., 8; Mansfield, Ohio, 75; Niles, Ohio, 64, 76; Vandergrift, Pa., 1; Warren, Ohio, 4; Zanesville, Ohio, 7.

## MERCHANT WIRE PRODUCTS

| *To dealers, f.o.b. mill* | *Base* | *Column Pittsburg, Calif.* |
|---|---|---|
| Standard & coated nails* | 106 | 125§ |
| Woven wire fence† | 116 | 139 |
| Fence posts, carloads†† | 116 | ... |
| Single loop bale ties | 113 | 137 |
| Galvanized barbed wire** | 126 | 146 |
| Twisted barbless wire | 126 | 146 |

* Pgh., Chi., Duluth; Worcester, 6 columns higher; Houston, 8 columns higher; Kansas City, 12 columns higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth, Joliet; Johnstown, 112.

| | *Base per 100 lb* | *Pittsburg, Calif.* |
|---|---|---|
| Merch. wire annealed‡ | $5.35 | $6.30 |
| Merch. wire, galv.‡ | 5.60 | 6.55 |
| Cut nails, carloads‡‡ | 6.75 | ... |

‡ Add 30¢ at Worcester; 20¢ at Chicago; 10¢ at Sparrows Pt.
‡‡ Less 20¢ to jobbers.
§ Torrance, 126.

PRODUCING POINTS — *Standard, Coated or galvanized nails, woven wire fence, bale ties, and barbed wire:* Alabama City, Ala., 4; Atlanta, 65; Aliquippa, Pa. (except bale ties), 5; Bartonville, Ill. (except bale ties), 34; Chicago, 4; Donora, Pa., 2; Duluth, 2; Fairfield, Ala., 11; Johnstown, Pa. (except bale ties), 3; Joliet, Ill., 2; Kokomo, Ind., 30; Minnequa, Colo., 14; Monessen, Pa. (except bale ties), 18; Pittsburg, Calif., 24; Portsmouth, Ohio, 20; Rankin, Pa. (except bale ties), 2; Sparrows Point (except woven fence), 3; Sterling, Ill., 33; San Francisco (except nails and woven fence), 14; Torrance, Calif. (nails only), 24; Worcester (nails only), 2; Houston (except bale ties), 83; Kansas City, 83.

*Fence Posts:* Duluth, 2; Johnstown, Pa., 3; Joliet, Ill., 2; Minnequa, Colo., 14; Moline, Ill., 4; Williamsport, Pa., 51.

*Cut nails:* Wheeling, W. Va., 15; Conshohocken, Pa., 26; Warehame, Mass., 53.

## RAILS, TRACK SUPPLIES

| *F.o.b. mill* | |
|---|---|
| Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb | $3.40 |
| Joint bars, per 100 lb | 4.40 |
| Light rails, per 100 lb | 3.75 |

| | *Base Price cents per lb* |
|---|---|
| Track spikes† | 5.60 |
| Axles | 5.25 |
| Screw spikes | 8.60 |
| Tie plates | 4.20 |
| Pittsburg, Torr., Calif.; Seattle | 4.35 |
| Track bolts, untreated** | 8.85 |
| Track bolts, heat treated, to railroads** | 9.10 |

** Minnequa, deduct 25¢. † Kansas City, 5.85¢.

PRODUCING POINTS—*Standard rails:* Bessemer, Pa., 1; Ensley, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Minnequa, Colo., 14; Steelton, 3.

*Light rails:* All the above except Indiana Harbor and Steelton, plus Fairfield, Ala., 11; Johnstown 3; Minnequa, 14.

*Joint bars:* Bessemer, Pa., 1; Fairfield, Ala., 11; Indiana Harbor, Ind., 8; Joliet, Ill., 1; Lackawanna, N. Y., 3; Steelton, Pa., 3; Minnequa, Colo., 14.

*Track spikes:* Fairfield, Ala., 11; Indiana Harbor, Ind., 6, 8; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 5; Chicago, 4; Struthers, 6; Youngstown, 4.

*Track bolts:* Fairfield, Ala., 11; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 77, 78.

*Axles:* Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 79; Johnstown, Pa., 3; McKees Rocks, Pa., 1.

*Tie plates:* Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Pittsburgh, Calif., 24; Pittsburgh, 4; Seattle, 62; Steelton, Pa., 3; Torrance, Calif., 24; Minnequa, Colo., 14.

**Numbers after producing points correspond to steel producers. See key on Steel Price page.**

## PIPE AND TUBING

*Base discounts, f.o.b. mills*
*Base price about $200.00 per net ton*

### Standard, T & C

| Steel, Buttweld* | *Black* | *Galv* |
|---|---|---|
| ⅛-in. | 40½ to 38½ | 24 to 22 |
| ¼-in. | 43½ to 41½ | 28 to 26 |
| ⅜-in. | 46 to 44 | 31 to 29 |
| ½-in. | 46½ to 44½ | 31½ to 29½ |
| ¾-in | 47 to 45 | 32 to 30 |
| 1-in. | 47½ to 45½ | 32½ to 30½ |
| 1¼ to 3-in. | 48 to 46 | 33 to 31 |
| **Steel, lapweld** | | |
| 2-in. | 38 | 22½ |
| 2½ to 3-in. | 42 | 26½ |
| 3½ to 6-in. | 43 to 40 | 27½ to 24½ |
| **Steel, seamless** | | |
| 2-in. | 36 | 20½ |
| 2½ to 3-in. | 39 | 23½ |
| 3½ to 6-in. | 41 | 25½ |
| **Wrought iron, buttweld** | | |
| ⅛-in. | +26½ | +53 |
| ¼-in. | +16½ | +42 |
| ⅜ & ½-in. | +10½ | +33 |
| ¾-in | + 4½ | +29½ |
| 1-in. | + 4 | +29 |
| **Wrought iron, lapweld** | | |
| 2-in. | +13½ | +37 |
| 2½ to 3½-in. | +11 | +32½ |
| 4-in. | + 6 | +26½ |
| 4½ to 8-in. | + 8 | +28 |
| 9 to 12-in. | +18 | +37½ |

### Extra Strong, Plain Ends

| **Steel, buttweld** | | |
|---|---|---|
| ⅛-in. | 39½ to 37½ | 24½ to 22½ |
| ¼-in. | 43½ to 41½ | 28½ to 26½ |
| ⅜-in. | 45½ to 43½ | 31½ to 29½ |
| ½-in. | 46 to 44 | 32 to 30 |
| ¾-in. | 46½ to 44½ | 32½ to 30½ |
| 1-in. | 47 to 45 | 33 to 32 |
| 1¼ to 3-in. | 47½ to 45½ | 33½ to 31½ |
| **Steel, lapweld** | | |
| 2-in. | 37 | 22½ |
| 2½ to 3-in. | 42 | 27½ |
| 3½ to 6-in. | 44½ to 41½ | 30 to 27 |
| **Steel, seamless** | | |
| 2-in. | 35 | 20½ |
| 2½ to 3-in. | 38 | 24½ |
| 3½ to 6-in. | 42½ | 28 |
| **Wrought iron, buttweld** | | |
| ⅛-in. | +22 | +47 |
| ¼-in. | +15½ | +40 |
| ⅜ to 2-in. | + 5½ | +29 |
| **Wrought iron, lapweld** | | |
| 2-in. | +10½ | +33½ |
| 2½ to 4-in. | + 1 | +22 |
| 4½ to 6-in. | + 5 | +26½ |
| 7 & 8 in. | list | +21½ |
| 9 to 12-in. | +11½ | +29½ |

For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct.
* Fontana, Calif., deduct 11 points from figures in left columns.

## BOILER TUBES

*Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut lengths 10 to 24 ft inclusive.*

| OD in. | gage BWG | Seamless H.R. | Seamless C.R. | Electric H.R. | Weld C.D. |
|---|---|---|---|---|---|
| 2 | 13 | $20.61 | $24.24 | $19.99 | 23.51 |
| 2½ | 12 | 27.71 | 32.58 | 26.88 | 31.60 |
| 3 | 12 | 30.82 | 36.27 | 29.90 | 35.18 |
| 3½ | 11 | 38.52 | 45.38 | 37.36 | 43.99 |
| 4 | 10 | 47.82 | 56.25 | 46.39 | 54.56 |

***Prices continued on next page***

## WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb. (Metropolitan area delivery, add 20¢ to base price except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul (*), add 15¢; Philadelphia, add 25¢).

| CITIES | SHEETS | | | STRIP | | PLATES | SHAPES | BARS | | ALLOY BARS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Hot-Rolled | Cold-Rolled (15 gage) | Galvanized (10 gage) | Hot-Rolled | Cold-Rolled | | Standard Structural | Hot-Rolled | Cold-Finished | Hot-Rolled, A 4615 As-rolled | Hot-Rolled, A 4140 Ann. | Cold-Drawn, A 4615 As-rolled | Cold-Drawn, A 4140 Ann. |
| Baltimore | 5.15 | 6.39[1] | 6.55[2] 6.65 | 5.59– 5.59[11] | .... | 6.04[11] | 5.89 | 5.79[11] | 6.19 | 9.89 | 9.99 | 11.12 | 11.49 |
| Birmingham* | 5.15[10] | 5.95 | .... | 5.10[10] | .... | 5.40 | 5.25 | 5.10[10] | 6.88 | .... | .... | .... | .... |
| Boston | 5.75 | 6.55[10] | 6.94[8] 7.14 | 5.70 | 6.90– 6.95 | 6.08 | 5.75 | 5.60 | 6.19– 6.69 | 9.70– 9.97 | 8.50– 10.00 | 11.15 | 11.45 |
| Buffalo | 5.15 | 5.95 | 6.94 | 5.41 | 7.27 | 5.65 | 5.35 | 5.15 | 5.75 | 9.80 | 9.90 | 11.05 | 11.35 |
| Chicago | 5.15 | 5.95 | 6.85 | 5.10 | 6.80 | 5.40 | 5.25 | 5.10 | 5.85 | 9.25 | 9.55 | 10.70 | 11.00 |
| Cincinnati* | 5.42– 5.97 | 5.99– 6.24 | 6.39 | 5.35 | .... | 5.79– 5.79 | 5.64 | 5.35– 5.54 | 5.96– 6.25 | 9.60– 9.81 | 9.90– 10.11 | 11.05– 11.26 | 11.35– 11.56 |
| Cleveland | 5.15 | 5.95 | 7.00– 7.10 | 5.24 | 6.35 | 5.52 | 5.37 | 5.12 | 5.75 | 9.36 | 9.66 | 10.81 | 11.11 |
| Detroit | 5.33 | 6.08 | 7.09 | 5.49 | 6.45– 6.80 | 5.79 | 5.64 | 5.39 | 5.91 | 9.56 | 9.86 | 11.01 | 11.31 |
| Houston | 5.75 | .... | .... | 6.10 | .... | 6.00 | 5.95 | 6.10 | 7.80 | 10.35– 10.45 | 10.50– 10.60 | 11.50 | 11.95 12.10 |
| Indianapolis | .... | .... | .... | .... | 7.38 | .... | .... | .... | 6.15 | .... | .... | .... | .... |
| Kansas City | 5.65 | 6.40 | .... | 5.70 | 6.95 | 5.80 | 5.65 | 5.60 | 6.35 | 9.85 | 10.15 | 11.30 | 11.60 |
| Los Angeles | 5.90 | 7.45 | 7.60[2] | 5.95 | 8.35[16] | 6.00 | 5.90 | 5.90 | 7.55 | 10.75 | 10.75 | 12.45 | 12.75 |
| Memphis | 5.93 | 6.58 | .... | 5.98 | 6.80 | 6.08 | 5.93 | 5.68 | .... | .... | .... | .... | .... |
| Milwaukee | 5.29 | 6.09 | 6.94– 6.99 | 5.24 | 6.32 | 5.54 | 5.39 | 5.24 | 5.89 | 9.39 | 9.69 | 10.84 | 11.14 |
| New Orleans* | 5.50[1] | 6.85[1] | .... | 5.55[1] | 6.90[1] | 5.65 | 5.55[1] | 5.55[1] | 6.75 | .... | .... | .... | .... |
| New York | 5.55– 5.65 | 6.54– 6.64[1] | 7.20[2] | 5.84 | 6.75[5] | 6.10 | 5.85 | 5.95 | 6.44 | 9.60 | 9.90 | 11.05 | 11.35 |
| Norfolk | 6.10 | 7.00 | .... | 6.30 | .... | 6.15 | 6.20 | 6.15 | 7.20 | .... | .... | .... | .... |
| Philadelphia* | 5.30 | 6.20 | 6.85[2] | 5.65 | 6.29 | 5.45 | 5.25 | 5.50 | 6.21 | 9.35 | 9.65 | 10.80 | 11.10 |
| Pittsburgh | 5.15 | 5.95 | 6.60 | 5.20 | 6.00 | 5.35 | 5.25 | 5.10 | 5.75 | 9.25 | 9.55 | 10.70 | 11.00 |
| Portland | 6.60– 7.10[1] | 8.40[2] | .... | 6.85[9] | .... | 6.40[9] | 6.50 | 6.45– 6.45[9] | 6.60[14] | 12.00[18] | 11.60[18] | .... | .... |
| Salt Lake City | 5.85 | 6.70 | .... | 7.45 | 8.75 | 6.10[3] | 5.90 | 7.35[3] | 6.75 | .... | .... | .... | .... |
| San Francisco* | 6.25[11] | 7.60[2] | 7.65[2] | 6.75[11] | 7.85[16] | 6.15[11] | 6.00[11] | 6.15[11] | 7.55 | 10.75 | 10.75 | 12.45 | 12.75 |
| Seattle | 6.60[4] | 8.15[2] | 8.40[2] | 6.85[4] | .... | 6.35[4] | 6.20[4] | 6.35[4] | 8.50[14] | .... | 11.60[18] | .... | 13.60[18] |
| St. Louis | 5.48 | 6.28 | 7.18 | 5.43 | 6.68– 7.54 | 5.73 | 5.58 | 5.43 | 6.08 | 9.58 | 9.88 | 11.03 | 11.33 |
| St. Paul* | 5.71 | 6.51 | 7.41 | 5.66 | 6.16– 6.82 | 5.96 | 5.81 | 5.66 | 6.31 | 9.81 | 10.11 | 11.26 | 11.56 |

**BASE QUANTITIES:** (*Standard unless otherwise keyed on prices.*)
Hot-rolled sheets and strip, hot rolled bars and bar shapes, structural shapes, plate, galvanized sheets and cold-rolled sheets: 2000 to 9999 lb. Cold-finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb.

All HR products may be combined to determine quantity bracket. All galvanized sheets may be combined to determine quantity bracket. CR sheets may not be combined with each other or with galv. sheets to determine quantity bracket.

**Exceptions:**
(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 to 5999 lb; (6) 1000 lb and over; (7) 500 to 1499 lb; (8) 400 lb and over; (9) 400 to 9999 lb; (10) 500 to 9999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 9999 lb; (16) 6000 lb and over; (17) up to 1999 lb; (18) 1000 to 4999 lb; (19) 1500 to 3499 lb; (20) CR sheets may be combined for quantity; (21) 3 to 24 bundles.

## PIG IRON PRICES

*Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.*

PRODUCING POINT PRICES

| Producing Point | Basic | No. 2 Foundry | Malleable | Bessemer | Low Phos. |
|---|---|---|---|---|---|
| Bethlehem | 48.00 | 48.50 | 49.00 | 49.50 | ..... |
| Birmingham | 41.88 | 42.38 | ..... | ..... | ..... |
| Buffalo | 48.00 | 48.50 | 47.00 | ..... | ..... |
| Chicago | 48.00 | 48.50 | 48.50 | 47.00 | ..... |
| Cleveland | 48.00 | 48.50 | 48.50 | 47.00 | 51.00 |
| Duluth | 48.00 | 48.50 | 48.50 | 47.00 | ..... |
| Erie | 48.00 | 48.50 | 48.50 | 47.00 | ..... |
| Everett | ..... | 50.50 | 51.00 | ..... | ..... |
| Granite City | 47.90 | 48.40 | 48.90 | ..... | ..... |
| Ironton, Utah | 48.00 | 48.50 | ..... | ..... | ..... |
| Pittsburgh | 48.00 | 48.50 | 48.50 | 47.00 | ..... |
| Geneva, Utah | 48.00 | 48.50 | ..... | ..... | ..... |
| Sharpsville | 48.00 | 48.50 | 48.50 | 47.00 | ..... |
| Steelton | 48.00 | 48.50 | 49.00 | 49.50 | 54.00 |
| Struthers, Ohio | 48.00 | ..... | ..... | ..... | ..... |
| Swedeland | 48.00 | 48.50 | 49.00 | 49.50 | ..... |
| Toledo | 48.00 | 48.50 | 48.50 | 47.00 | ..... |
| Troy, N. Y. | 48.00 | 48.50 | 49.00 | ..... | 54.00 |
| Youngstown | 48.00 | 48.50 | 48.50 | 47.00 | ..... |

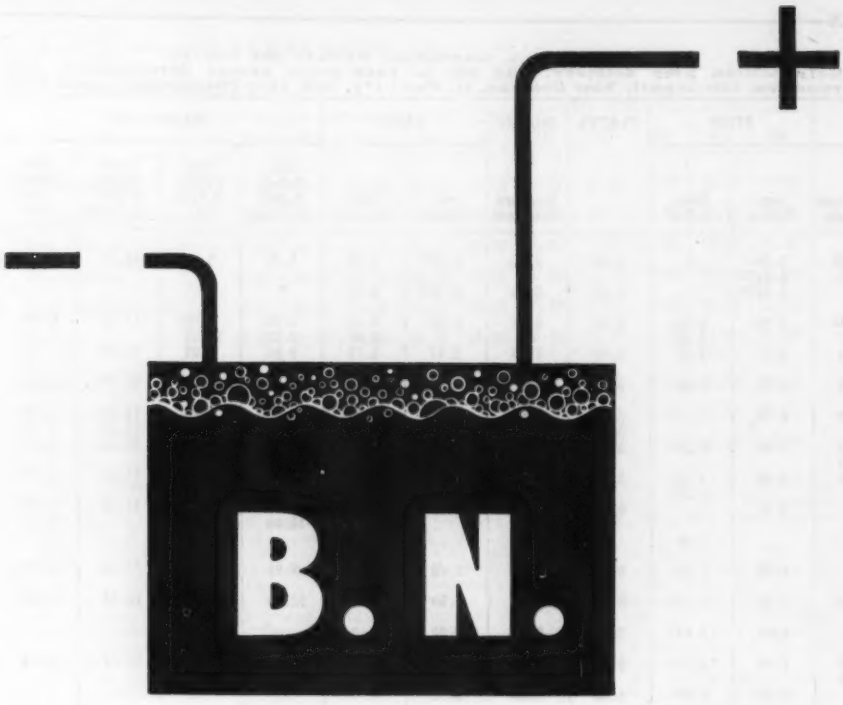
DELIVERED PRICES (BASE GRADES)

| Consuming Point | Producing Point | Rail Freight Rate | Basic | No. 2 Foundry | Malleable | Bessemer | Low Phos. |
|---|---|---|---|---|---|---|---|
| Boston | Everett | $0.50 Arb. | ..... | 50.50 | 51.00 | ..... | ..... |
| Boston | Steelton | 6.90 | ..... | ..... | ..... | ..... | 60.90 |
| Brooklyn | Bethlehem | 4.29 | ..... | 52.79 | 53.29 | 53.79 | ..... |
| Cincinnati | Birmingham | 6.70 | 48.58 | 49.08 | ..... | ..... | ..... |
| Jersey City | Bethlehem | 2.63 | ..... | 51.13 | 51.63 | 52.13 | ..... |
| Los Angeles | Geneva-Ironton | 7.70 | 53.70 | 54.20 | ..... | ..... | ..... |
| Mansfield | Cleveland-Toledo | 3.38 | 49.33 | 49.83 | 49.83 | 50.33 | 54.33 |
| Philadelphia | Bethlehem | 2.39 | 50.39 | 50.89 | 51.39 | 51.89 | ..... |
| Philadelphia | Swedeland | 1.44 | 49.44 | 49.94 | 50.44 | 50.94 | ..... |
| Philadelphia | Steelton | 3.09 | ..... | ..... | ..... | ..... | 57.09 |
| Rochester | Buffalo | 2.63 | 48.63 | 49.13 | 49.63 | ..... | ..... |
| San Francisco | Geneva-Ironton | 7.70 | 53.70 | 54.20 | ..... | ..... | ..... |
| Seattle | Geneva-Ironton | 7.70 | 53.70 | 54.20 | ..... | ..... | ..... |
| St. Louis | Granite City | 0.75 Arb. | 48.65 | 49.15 | 49.65 | ..... | ..... |
| Syracuse | Buffalo | 3.58 | 49.58 | 50.08 | 50.58 | ..... | ..... |

**Producing point prices are subject to switching charges; silicon differential (not to exceed 50c per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 38c per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50c per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.**

**Silvery iron (blast furnace) silicon 6.01 to 6.50 pct C/L per g.t., f.o.b. Jackson, Ohio—$57.00; f.o.b. Buffalo, $58.25. Add $1.00 per ton for each additional 0.50 pct Si up to 17 pct. Add 50c per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.**

**Charcoal pig iron base price for low phosphorus $60.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, $68.56. High phosphorus charcoal pig iron is not being produced.**




## . . . prepares nickel for chromium

Have you tried Wyandotte B.N.? Steadily increasing sales vouch for its performance. It's used in the preparation of nickel-plated parts for chromium plating. It does a job on bright nickel and on buffed dull or buffed semi-bright.

An excellent conductor, B.N. properly activates the nickel surface in direct electrocleaning.

B.N. wets rapidly, removes all traces of buffing compounds, lint, shop dirt and fingerprints. It has long life . . . rinses freely, eliminates clouded plate. It is dependable under a wide range of operating conditions.

For the full facts on B.N., write us.

**WYANDOTTE CHEMICALS CORPORATION**
**WYANDOTTE, MICHIGAN**
SERVICE REPRESENTATIVES IN 88 CITIES

Wyandotte
REG. U. S. PAT. OFF.




## BOLTS, NUTS, RIVETS, SET SCREWS

**Consumer Prices**

*(Bolts and nuts, f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)*
*Base discount*

**Machine and Carriage Bolts**

| | Pct Off List Less Case | C. |
|---|---|---|
| ½ in. & smaller x 6 in. & shorter | 27 | 38 |
| 9/16 & ⅝ in. x 6 in. & shorter | 29 | 40 |
| ¾ in. & larger x 6 in. & shorter | 26 | 37 |
| All diam, longer than 6 in. | 22 | 34 |
| Lag, all diam, longer than 6 in. | 28 | 39 |
| Lag, all diam x 6 in. & shorter | 30 | 41 |
| Plow bolts | 40 | — |

**Nuts, Cold Punched or Hot Pressed**

*(Hexagons or Square)*

| | |
|---|---|
| ½ in. and smaller | 25 37 |
| 9/16 to ⅝ in. | 23 35 |
| ¾ to 1½ in. inclusive | 23 35 |
| 1⅝ in. and larger | 16 29 |

**Semifinished Hexagon Nuts**

*(Less case lots)*

| | Pct Off List Reg | Hvy | Lt |
|---|---|---|---|
| ½ in. and smaller | 41 | 35 | 41 |
| 9/16 to ⅝ in. | 36 | 30 | 36 |
| ¾ to 1½ in. | 31 | 27 | 33 |
| 1⅝ in. and larger | 21 | 17 | .. |

In full case lots, 15 pct additional discount.

**Stove Bolts**

| | Pct Off List |
|---|---|
| Packaged, steel, plain finish | 63 |
| Packaged, plated finish | 50 |
| Bulk, plain finish** | 69* |

* Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

** Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

**Large Rivets**

*(½ in. and larger)*
*Base per 100 lb*

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa. $7.25

**Small Rivets**

*(7/16 in. and smaller)*
*Pct Off List*

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham 43

**Cap and Set Screws**

*(In bulk)* *Pct Off List*

| | |
|---|---|
| Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright | 60 |
| ¼ in. through ⅝ in. x 6 in. and shorter high C heat treated | 54 |
| Milled studs | 23 |
| Flat head cap screws, listed sizes | 24 |
| Fillister head cap, listed sizes | 43 |
| Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. and shorter | 59 |

## C-R SPRING STEEL

*Base per pound f.o.b. mill*

| | |
|---|---|
| 0.26 to 0.40 carbon | 4.15¢ |
| 0.41 to 0.60 carbon | 5.95¢ |
| 0.61 to 0.80 carbon | 6.55¢ |
| 0.81 to 1.05 carbon | 8.50¢ |
| 1.06 to 1.35 carbon | 10.80¢ |

Worcester, add 0.30¢.

## LAKE SUPERIOR ORES

(51.50% *Fe; natural content, delivered lower lake ports*)

*Per gross ton*

| | |
|---|---|
| Old range, bessemer | $8.10 |
| Old range, nonbessemer | 7.95 |
| Mesabi, bessemer | 7.85 |
| Mesabi, nonbessemer | 7.70 |
| High phosphorus | 7.70 |

After Jan. 25, 1950, increases or decreases in Upper Lake rail freight, dock handling charges and taxes are for buyers' account.

## ELECTRODES

*Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed*

| Diam. in in. | Length in in. | Cents Per lb |
|---|---|---|
| **GRAPHITE** | | |
| 17, 18, 20 | 60, 72 | 16.00¢ |
| 8 to 16 | 48, 60, 72 | 16.50¢ |
| 7 | 48, 60 | 17.75¢ |
| 6 | 48, 60 | 19.00¢ |
| 4, 5 | 40 | 19.50¢ |
| 3 | 40 | 20.50¢ |
| 2½ | 24, 30 | 21.00¢ |
| 2 | 24, 30 | 23.00¢ |
| **CARBON** | | |
| 40 | 100, 110 | 7.50¢ |
| 35 | 65, 110 | 7.50¢ |
| 30 | 65, 84, 110 | 7.50¢ |
| 24 | 72 to 104 | 7.50¢ |
| 20 | 84, 90 | 7.50¢ |
| 17 | 60, 72 | 7.50¢ |
| 14 | 60, 72 | 8.00¢ |
| 10, 12 | 60 | 8.25¢ |
| 8 | 60 | 8.50¢ |

## CLAD STEEL

*Base prices, cents per pound, f.o.b. mill*

| | Plate | Sheet |
|---|---|---|
| Stainless-carbon | | |
| No. 304, 20 pct, | | |
| Coatesville, Pa. (21).. | *26.50 | |
| Washgtn, Pa. (39).... | *26.50 | |
| Claymont, Del. (29)... | *26.50 | |
| Conshohocken, Pa. (26) | | *22.50 |
| New Castle, Ind. (55). | *26.50 | *24.00 |
| Nickel-carbon | | |
| 10 pct, Coatesville (26).. | 27.50 | |
| Inconel-carbon | | |
| 10 pct, Coatesville (21).. | 36.00 | |
| Monel-carbon | | |
| 10 pct, Coatesville (21).. | 29.00 | |
| No. 302 Stainless-copper-stainless, Carnegie, Pa. (60) ..... | | 75.00 |
| Aluminized steel sheets, hot dip, Butler, Pa. (7)..... | | 7.75 |

* Includes annealing and pickling, or sandblasting.

## TOOL STEEL

*F.o.b. mill*

| W | Cr | V | Mo | Co | Base per lb |
|---|---|---|---|---|---|
| 18 | 4 | 1 | — | — | $1.00 |
| 18 | 4 | 1 | — | 5 | $1.565 |
| 18 | 4 | 2 | — | — | $1.13 |
| 1.5 | 4 | 1.5 | 8 | — | 71.5¢ |
| 6 | 4 | 2 | 6 | — | 76.5¢ |
| High-carbon-chromium ..... | | | | | 57.5¢ |
| Oil hardened manganese..... | | | | | 32¢ |
| Special carbon ..... | | | | | 29.5¢ |
| Extra carbon ..... | | | | | 24.5¢ |
| Regular carbon ..... | | | | | 21¢ |

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

## COKE

| | Net Ton |
|---|---|
| Furnace, beehive (f.o.b. oven) | |
| Connellsville, Pa. .....$14.00 to | $14.50 |
| Foundry, beehive (f.o.b. oven) | |
| Connellsville, Pa. .....$16.00 to | $16.50 |
| Foundry, oven coke | |
| Buffalo, del'd .....$24.00 | |
| Chicago, f.o.b. ..... 21.00 | |
| Detroit, f.o.b. ..... 20.40 | |
| New England, del'd..... 23.40 | |
| Seaboard, N. J., f.o.b..... 22.00 | |
| Philadelphia, f.o.b. ..... 21.25 | |
| Swedeland, Pa., f.o.b..... 21.20 | |
| Painesville, Ohio, f.o.b..... 21.90 | |
| Erie, del'd .....$21.04 to 21.25 | |
| Cleveland, del'd ..... 22.62 | |
| Cincinnati, del'd ..... 22.71 | |
| St. Paul, f.o.b..... 21.00 | |
| St. Louis, del'd ..... 22.18 | |
| Birmingham, del'd ..... 20.20 | |

## FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill. Base price, per ton net; Effective CaF, content:

70% or more.....$37.00
60% or less ..... 34.00

***Prices Continued on Next Page***


# KENNAMETAL
## Developments for Reducing Cost of Manufacturing and Servicing Chilled Iron Rolls

**ROUGHING and FINISHING TOOLS for Plunge Feed Lathes**

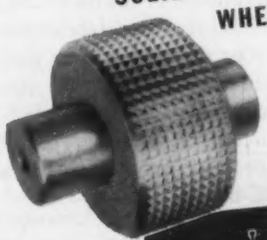
STYLE RT

STYLE RRT

These rugged, durable Kennametal tools cut machining time in half, on chilled cast iron rolls. Style RRT slices through scale easier, permits faster speeds and huskier feeds, trues up a roll quickly. Style RT gives superior finish that requires little or no grinding. Exclusive features include: (1) Kennametal cutting edges that stay sharp up to 100 times as long as steel; (2) Exceptional strength that stands gaff of crashing through scale, chill balls, and burned spots; (3) Simplified maintenance—resharpening simply requires squaring off the cutting edges. Ask our field engineer to demonstrate.

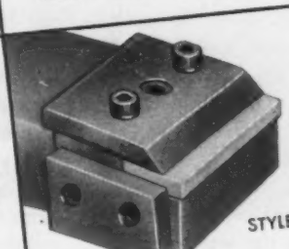
Style RRT (above) has replaceable solid Kennametal cylinders that can be turned on their axis to provide a multiplicity of cutting edges; Style RT (right) has a solid Kennametal blade that provides four successively available cutting edges. Standard widths, both tools—4", 6", 8", 10"

**SOLID KNURLING WHEEL**



The ground-in knurls of this solid Kennametal wheel keep their shape far longer than those on steel wheels —performance reports indicate as much as 100 times the service before regrinding is necessary. Made on order to customer's specifications.

**CLAMPED-IN BLADE TOOL for Longitudinal Feed Lathes**



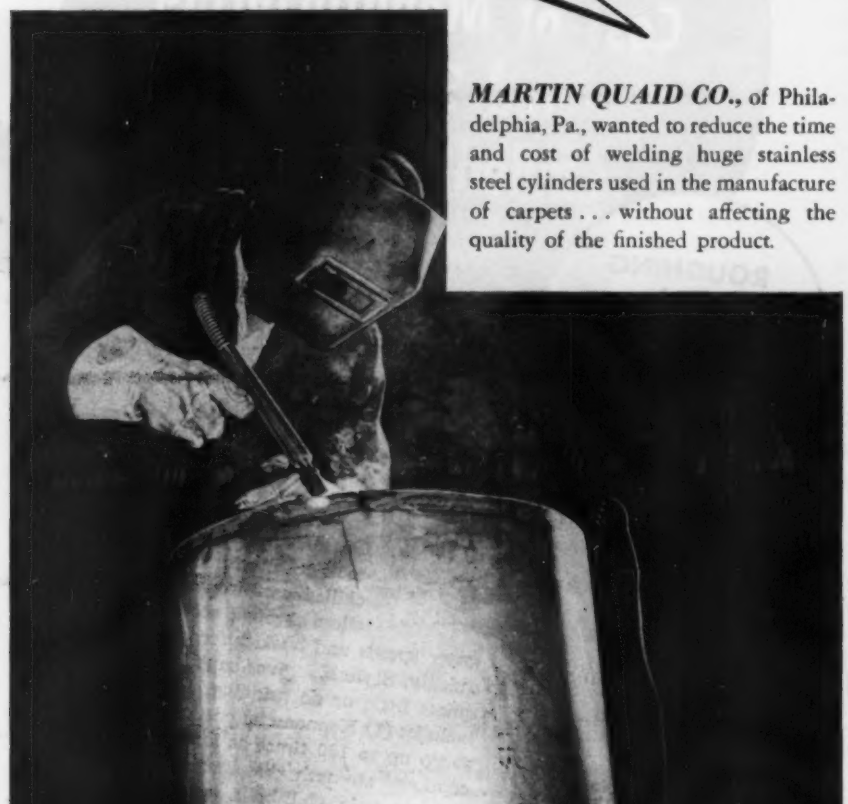
STYLE LRT

This tool employs the proved Kennametal mechanically-held principle. Its width is 2½", and like the Style RT tool shown above its blade has four cutting edges that can be used before any sharpening is required. Then the cutting edges are squared off, and the blade can be advanced after each sharpening.

KENNAMETAL Inc.
LATROBE, PA.

MANUFACTURERS OF SUPERIOR CEMENTED CARBIDES AND CUTTING TOOLS THAT INCREASE PRODUCTIVITY

# New Aircomatic® Welding Process cuts materials cost 25% ... saves 4½ hours time



***MARTIN QUAID CO.***, of Philadelphia, Pa., wanted to reduce the time and cost of welding huge stainless steel cylinders used in the manufacture of carpets . . . without affecting the quality of the finished product.

***Dana V. Wilcox,*** Airco Technical Service Specialist, was called in. He recommended the use of Airco's new Aircomatic process. The cylinder to be welded was 13′ 4″ long with an O.D. of 34¾″, and a wall thickness of .093 Type 304 stainless steel. After establishing the wire speed to be used in the Aircomatic process, the weld was performed in a total elapsed time of 1½ hours—4½ hours faster than the former method used.

The operation consumed 6½ pounds of Airco Type 316 stainless steel wire, and 35 c.f.h. of Airco high quality inert gas—all at 25% below the cost of materials used in the old procedure. The customer was well satisfied and now uses the Aircomatic process for fabricating stainless steel as well as aluminum.

If you are interested in applying the Aircomatic process to a particular aluminum, aluminum or silicon bronze, stainless or nickel clad steel fabrication problem of your own, we will be glad to offer technical assistance. If you would like to receive a descriptive bulletin on Aircomatic welding, please write your nearest Airco office for a copy of ADC-661A.

AIRCO **AIR REDUCTION**

*Offices in Principal Cities*

TECHNICAL SALES SERVICE—ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS




## REFRACTORIES

**Fire Clay Brick** (*F.o.b. works*) *Carloads, Per* 1000

| | |
|---|---|
| First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5) | $86.00 |
| No. 1 Ohio | 80.00 |
| Sec. quality, Pa., Md., Ky., Mo., Ill. | 80.00 |
| No. 2 Ohio | 72.00 |
| Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50) | 14.00 |

**Silica Brick**

| | |
|---|---|
| Mt. Union, Pa., Ensley, Ala. | $86.00 |
| Childs, Pa. | 90.00 |
| Hays, Pa. | 91.00 |
| Chicago District | 95.00 |
| Western Utah and Calif. | 101.00 |
| Super Duty, Hays, Pa., Athens, Tex., Chicago | 106.00 |
| Silica cement, net ton, bulk, Eastern (except Hays, Pa.) | 15.00 |
| Silica cement, net ton, bulk, Hays, Pa. | 17.00 |
| Silica cement, net ton, bulk, Ensley, Ala. | 16.00 |
| Silica cement, net ton, bulk, Chicago District | 16.00 |
| Silica cement, net ton, bulk, Utah and Calif. | 22.50 |

**Chrome Brick** *Per Net Ton*

| | |
|---|---|
| Standard chemically bonded, Balt., Chester | $69.00 |

**Magnesite Brick**

| | |
|---|---|
| Standard, Baltimore | $91.00 |
| Chemically bonded, Baltimore | 80.00 |

**Grain Magnesite** *St. ¾-in. grains*

| | |
|---|---|
| Domestic, f.o.b. Baltimore, in bulk fines removed | $56.00 to $57.00 |
| Domestic, f.o.b. Chewelah, Wash., in bulk | 33.00 |
| in sacks | 38.00 |

**Dead Burned Dolomite**

| | |
|---|---|
| F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢ | $12.25 |

## METAL POWDERS

*Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.*

| | |
|---|---|
| Swedish sponge iron c.i.f. New York, ocean bags | 7.4¢ to 9.0¢ |
| Canadian sponge iron, del'd, in East | 10.00¢ |
| Domestic sponge iron, 98+% Fe, carload lots | 9.0¢ to 15.0¢ |
| Electrolytic iron, annealed, 99.5+% Fe | 36.0¢ to 39.5¢ |
| Electrolytic iron unannealed, minus 325 mesh, 99+% Fe | 48.5¢ |
| Hydrogen reduced iron, minus 300 mesh, 98+% Fe | 63.0¢ to 80.0¢ |
| Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe | 70.0¢ to $1.35 |
| Aluminum | 29.00¢ |
| Brass, 10 ton lots | 27.75¢ to 31.25¢ |
| Copper, electrolytic | 9.25¢ plus metal value |
| Copper, reduced | 9.75¢ plus metal value |
| Cadmium, 100-199 lb | $2.95 |
| Chromium, electrolytic, 99% min., and quantity | $3.50 |
| Lead | 18.50¢ |
| Manganese | 52.00¢ |
| Molybdenum, 99% | $3.65 |
| Nickel, unannealed | 66.00¢ |
| Nickel, annealed | 72.00¢ |
| Nickel, spherical, unannealed | 69.00¢ |
| Silicon | 34.00¢ |
| Solder powder | 6.5¢ to 8.5¢ plus met. value |
| Stainless steel, 302 | 75.00¢ |
| Tin | 11.00¢ plus metal value |
| Tungsten, 99% | $3.90 |
| Zinc, 10 ton lots | 20.50¢ to 23.85¢ |

## CAST IRON WATER PIPE

*Per net ton*

| | |
|---|---|
| 6 to 24-in., del'd Chicago | $91.80 to $95.30 |
| 6 to 24-in., del'd N. Y. | 91.00 to 92.00 |
| 6 to 24-in., Birmingham | 78.00 to 82.50 |
| 6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less | $108.50 to $113.00 |

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

## FERROALLOYS

### Ferromanganese

78-82% Mn. maximum contract base price, gross ton, lump size.

| | |
|---|---|
| F.o.b. Birmingham | $174 |
| F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont. | $172 |
| F.o.b. Johnstown, Pa. | $174 |
| F.o.b. Sheridan, Pa. | $172 |
| F.o.b. Etna, Clairton, Pa. | $175 |

$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

| | |
|---|---|
| Carload, bulk | 10.45 |
| Ton lots | 12.05 |

### Spiegeleisen

Contract prices gross ton, lump, f.o.b.

| | 16-19% Mn 3% max. Si | 19-21% Mn 3% max. Si |
|---|---|---|
| Palmerton, Pa. | $64.00 | $65.00 |
| Pgh. or Chicago | 65.00 | 66.00 |

### Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

| | |
|---|---|
| Carload, packed | 35.5 |
| Ton lots | 37.0 |

### Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

| | |
|---|---|
| Carloads | 28 |
| Ton lots | 30 |
| Less ton lots | 32 |

### Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn. 18.15¢

### Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.

| | Carloads | Ton | Less |
|---|---|---|---|
| 0.07% max. C, 0.06% P, 90% Mn | 25.25 | 27.10 | 28.30 |
| 0.10% max. C | 24.75 | 26.60 | 27.80 |
| 0.15% max. C | 24.25 | 26.10 | 27.30 |
| 0.30% max. C | 23.75 | 25.60 | 26.80 |
| 0.50% max. C | 23.25 | 25.10 | 26.30 |
| 0.75% max. C, 7.00% max. Si | 20.25 | 22.10 | 23.30 |

### Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

| | |
|---|---|
| Carload bulk | 8.95 |
| Ton lots | 10.60 |
| Briquet, contract basis carlots, bulk delivered, per lb of briquet | 10.30 |
| Ton lots | 11.90 |

### Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $77.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $73.50. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

### Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

| | |
|---|---|
| 96% Si, 2% Fe | 20.70 |
| 97% Si, 1% Fe | 21.10 |

### Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 1 lb Si briquets.

| | |
|---|---|
| Carload, bulk | 6.30 |
| Ton lots | 7.90 |

### Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

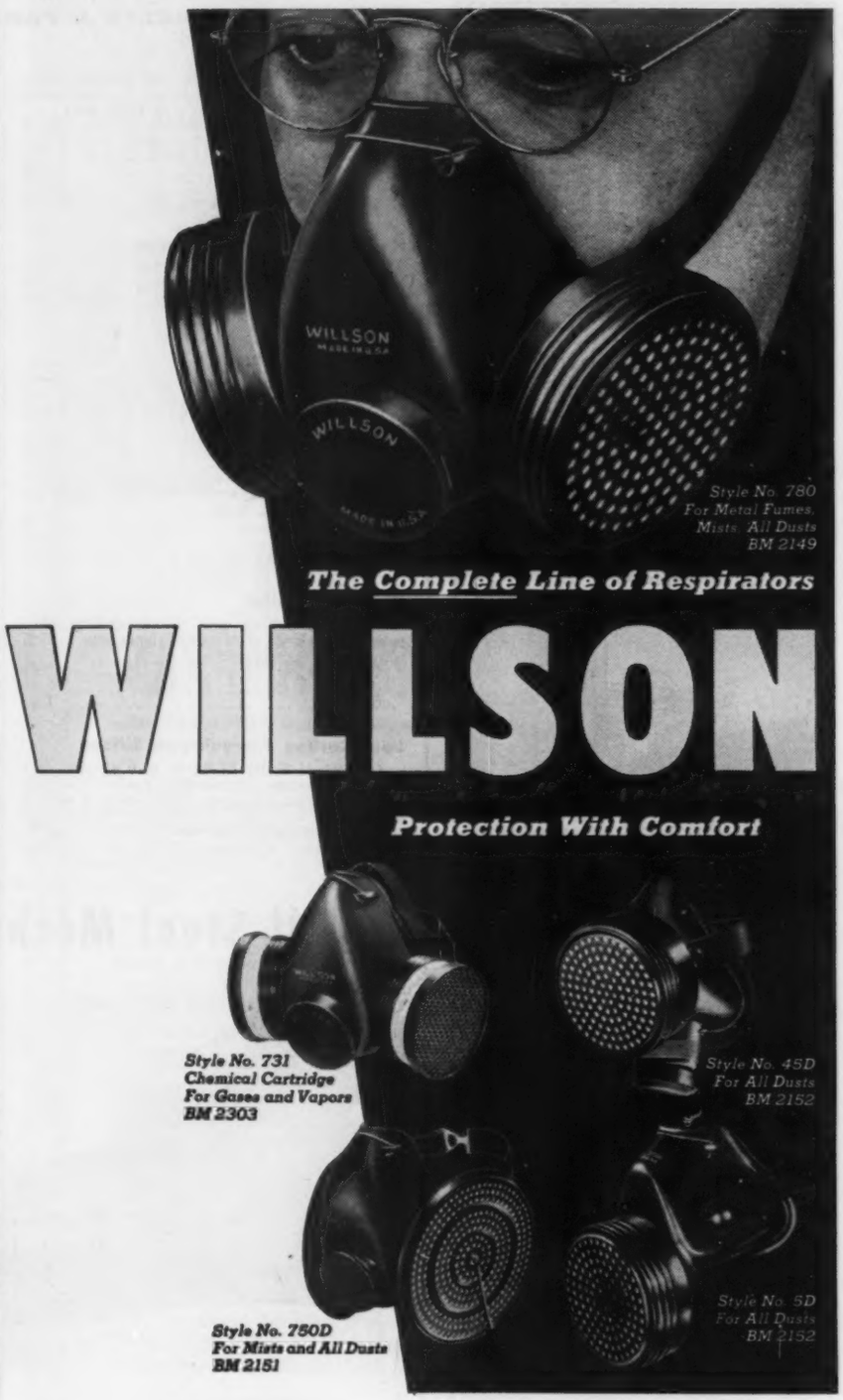
| | | | |
|---|---|---|---|
| 25% Si | 17.00 | 75% Si | 13.50 |
| 50% Si | 11.30 | 85% Si | 14.65 |
| 90-95% Si | | | 16.50 |

### Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

| | Cast Turnings | Distilled |
|---|---|---|
| Ton lots | $2.05 | $2.95 $3.75 |
| Less ton lots | 2.40 | 3.30 4.55 |

*Prices Continued on Next Page*

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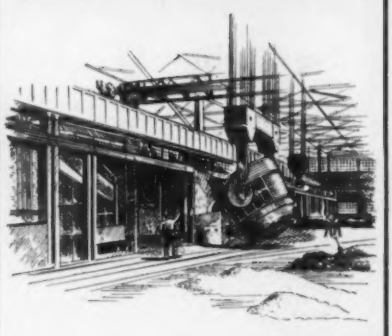

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Plants at Billmeyer, Pa. and Millersville, Ohio.

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### Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max Si.)

| | | | |
|---|---|---|---|
| 0.06% C .... | 28.75 | 0.20% C .... | 27.75 |
| 0.10% C .... | 28.25 | 0.50% C .... | 27.50 |
| 0.15% C .... | 28.00 | 1.00% C .... | 27.25 |
| 2.00% C | | | 27.00 |
| 65-69% Cr, 4-9% C | | | 20.50 |
| 62-66% Cr, 4-6% C, 6-9% Si. | | | 21.35 |

### High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

### S. M. Ferrochrome

Contrast price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

| | |
|---|---|
| Carloads | 21.60 |
| Ton lots | 23.75 |
| Less ton lots | 25.25 |

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

| | |
|---|---|
| Carloads | 27.75 |
| Ton lots | 30.05 |
| Less ton lots | 31.85 |

### Chromium Metal

Contract prices, per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

| | |
|---|---|
| 0.20% Max. C. | $1.09 |
| 0.50% max. C | 1.05 |
| .00 min. C | 1.04 |

### Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 20.50¢ per lb of contained Cr plus 11.30¢ per lb of contained Si.

Bulk 1-in. x down, 20.65¢ per lb contained Cr plus 11.50¢ per lb contained Si.

### Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 3.00% max Fe.

| | |
|---|---|
| Carloads | 17.90 |
| Ton lots | 21.00 |
| Less ton lots | 22.50 |

### Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

| | |
|---|---|
| Carloads | 19.25 |
| Ton lots | 21.55 |
| Less ton lots | 22.55 |

### CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

| | |
|---|---|
| Ton lots | 19.75 |
| Less ton lots | 21.00 |

### V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

| | |
|---|---|
| Ton lots | 15.75¢ |
| Less ton lots | 17.00¢ |

### Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

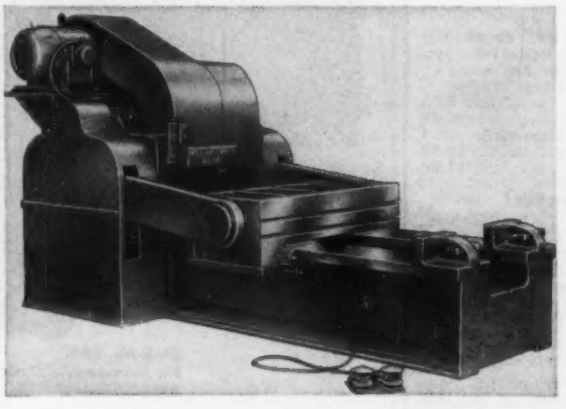
| | |
|---|---|
| Carload packed | 17.00¢ |
| Ton lots to carload packed | 18.00¢ |
| Less ton lots | 19.50¢ |

### SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

| | |
|---|---|
| Ton lots | 17.25 |
| Less ton lots | 18.50 |

All Steel Mechanical Bulldozer



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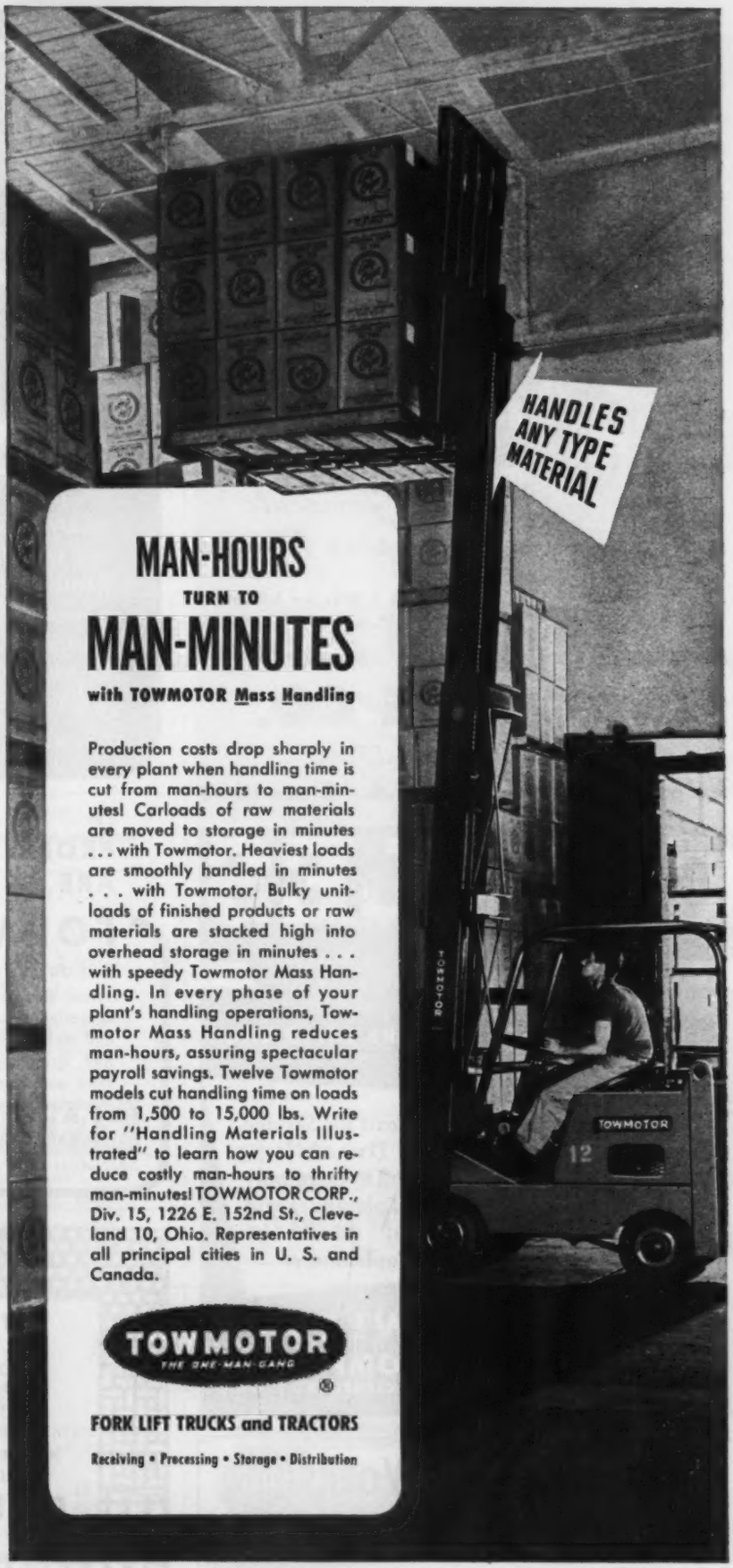
**Other Ferroalloys**

| | |
|---|---|
| Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y. | |
| Carload | 7.85¢ |
| Ton lots | 9.05¢ |
| Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo | 96¢ |
| Ferrocolumbium, 50-60%, 2 in x D, contract basis, delivered, per pound contained Cb. | |
| Ton lots | $3.50 |
| Less ton lots | 3.55 |
| Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta | $2.67 |
| Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo | $1.13 |
| Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton | $65.00 |
| 10 tons to less carload | 75.00 |
| Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti | $1.28 |
| Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti | $1.40 |
| Less ton lots | $1.45 |
| Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton | $167.00 |
| Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered | $2.25 |
| Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V. | |
| Openhearth | $2.90 |
| Crucible | 3.00 |
| High speed steel (Primos) | 3.10 |
| Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. | 95¢ |
| bags, f.o.b. Washington, Pa., Langeloth, Pa. | 94¢ |
| Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound | |
| Carload, bulk, lump | 11.00¢ |
| Ton lots, bulk, lump | 11.50¢ |
| Less ton lots, lump | 12.25¢ |
| Vanadium pentoxide, 88-92% $V_2O_5$ contract basis, per pound contained $V_2O_5$ | $1.20 |
| Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy. | |
| Ton lots | 21.00¢ |
| Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy. | |
| Carload, bulk | 6.60¢ |

**Boron Agents**

| | |
|---|---|
| Contract prices per lb of alloy, del. | |
| Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B | $4.25 |
| Bortam, f.o.b. Niagara Falls | |
| Ton lots, per pound | 45¢ |
| Less ton lots, per pound | 50¢ |
| Carbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed. | |
| Ton lots, per pound | 10.00¢ |
| Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots | $1.20 |
| F.o.b. Wash., Pa.; 100 lb, up | |
| 10 to 14% B | .75 |
| 14 to 19% B | 1.20 |
| 19% min. B | 1.50 |
| Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. | |
| No. 1 | 93¢ |
| No. 6 | 63¢ |
| No. 79 | 45¢ |
| Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered. | |
| Ton lots | $1.46 |
| Less ton lots | 1.57 |
| Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered. | |
| Less ton lots | $1.80 |
| Silcaz, contract basis, delivered. | |
| Ton lots | 45.00¢ |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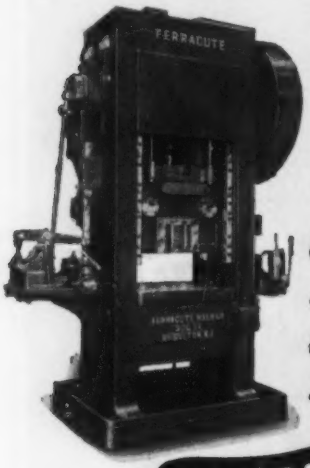


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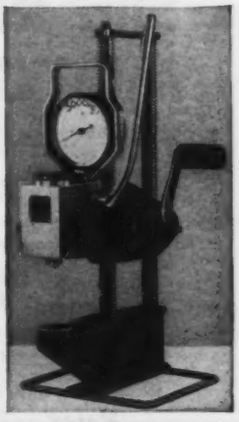

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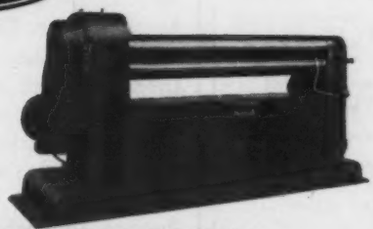
| 444 | 42" x 11 GA. | 504 | 48" x 8 GA. | 604 | 48" x 5/16" |
| 450 | 48" x 12 GA. | 505 | 60" x 10 GA. | 605 | 60" x 1/4" |
| 462 | 60" x 14 GA. | 506 | 72" x 12 GA. | 606 | 72" x 3/16" |
| 474 | 72" x 16 GA. | 508 | 96" x 16 GA. | 608 | 96" x 10 GA. |



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| 1 | 500 | G.E. | IM | 2200 | 450 |
| 1 | 500 | G.E. | IP | 550 | 505 |
| 2 | 350 | Whse. | CW | 2200 | 900 |
| 1 | 350 | G.E. | MT-442Y | 2200/4000 | 253 |
| 1 | 300 | Al. Ch. | | 2300 | 505 |
| 1 | 300 | G.E. | IP | 440/2300 | 705 |
| 5 | 300 | Al. Ch. | | 440/2200 | 705 |
| 1 | 250 | G.E. | MT-424Y | 4000 | 257 |
| 1 | 250 | G.E. | MT-5598 | 2200 | 1800 |
| 2 | 100 | G.E. | IM | 2200 | 435 |
| 2 | 100 | G.E. | IM | 440 | 900 |
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| 1 | 125 | Whse. | MS | 440 | 485 |
| 1 | 125(NEW) | G.E. | KF-TEFC | 440 | 1190 |
| 2 | 100 | G.E. | KT-543 | 220/440 | 1750 |
| **SYNCHRONOUS** | | | | | |
| 2 | 3500 | G.E. | TS | 2300 | 257 |
| 1 | 2100 | G.E. | ATI | 4600 | 514 |
| 2 | 2000 | Whse. | | 2300 | 120 |
| 1 | 1470 | Whse. | | 2300/4600 | 900 |
| 1 | 1000 | Whse. | Mill | 2300 | 188.5 |
| 1 | 900 | Al. Ch. | | 2200 | 150 |
| 1 | 600 | Whse. | | 440 | 300 |
| 2 | 350 | G.E. | TS | 2200 | 150 |
| 1 | 320 | G.E. | ATI | 2300 | 600 |
| 1 | 300 | G.E. | ATI | 440 | 720 |

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75-ton Morgan, 25-ton aux. 49'8" span, 230 V.D.C.
30-ton Cyclops, 5-ton aux. 50'0" span, 220/440/3/60 New 1943.
30-ton Shaw, 10-ton aux. 74'0" span, 230 V.D.C.
20-ton Alliance, 3 Motor 80'0" span, 230 V.D.C.
15-ton Leonard-Burke—span to suit, 220/440/3/60—Never used.
10-ton Shaw, 60'0" span—rebuild with D.C. or A.C. motors.
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7½-ton Northern, 31'4" span, 220/3/60 Fl. Cent.
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# THE CLEARING HOUSE

**NEWS OF USED, REBUILT AND SURPLUS MACHINERY**

**Purchasing Agents** — Many dealers in the Philadelphia area, acting as purchasing agents for their clients, are scouring the market for scarce equipment. Their principal difficulty is finding machinery to fill buyer's needs. Reason is that plant managements are holding on to good used machinery.

Even when there is no immediate use in view or in long range prospect, plants are not replacing their equipment on a normal scale. The cost of replacement is considered too high unless there is a job on which it can be written off.

**War Babies** — Used machinery dealers in the Pittsburgh district are being haunted by "war babies" and auctioneers. A steady procession of "war babies"—industries that thrived on war contracts—are going out of business. Most of them are disposing of their equipment through auctioneers.

One dealer here reports that nearly every mail brings notice of another auction sale some place throughout the country. Many potential customers flock to these sales, he said, because (1) the machinery offered usually is relatively new, and (2) they're attracted by the possibility of landing a bargain.

**Owner's Preference**—Many owners of plants being liquidated seem to prefer dealing with auctioneers because they want to dispose of the equipment as quickly as possible, according to one Pittsburgh dealer. The auctioneer usually buys the entire plant and then sells the equipment for the best price he can get.

Another dealer, while admitting that auctions are a factor, said they were not enough of an influence to really hurt. He tries to turn the auctions to his own advantage by attending them in the hope of buttonholing a potential customer for the particular equipment he has on hand.

**Machinery Profits**—Although the volume of tool business in Philadelphia in 1950 is not as heavy as that of the early part of 1949, the net return of 1950 business is about as good as last year's. Dollar return on 1950 business is reported to be considerably higher per tool handled.

**MDNA Standards**—Most Philadelphia used machinery dealers are optimistic over the adoption at the recent MDNA Detroit convention of a standard terminology for governing machinery sales. However, they have not yet got the plan fully integrated into their operations. When this is accomplished, they feel that the increased buyer confidence will result in a higher ethical level for their industry.

**Houston Dealer Expands** — The Machinery Sales and Engineering Co. of this city has recently moved into larger quarters. The company's office and rebuilding facilities are now housed in a 70x83-ft mill type building on over 20,000 sq ft of ground space. Machinery handling is expedited by its 7½-ton, 40-ft span main crane, and its two 5-ton bay cranes.

**Chicago NISA**—The Central District chapter of the National Industrial Service Assn. recently held a meeting at the Electric Club of Chicago. Paul M. Sievert, presiding officer, introduced Robert C. Ballou of Metallizing, Inc., who spoke on: "Metal Spraying."

**Electrical Business** — The recent slow-down in the coal mines has hurt electrical dealers in the Pittsburgh area. However, there is still a continuing demand for motor generator sets.